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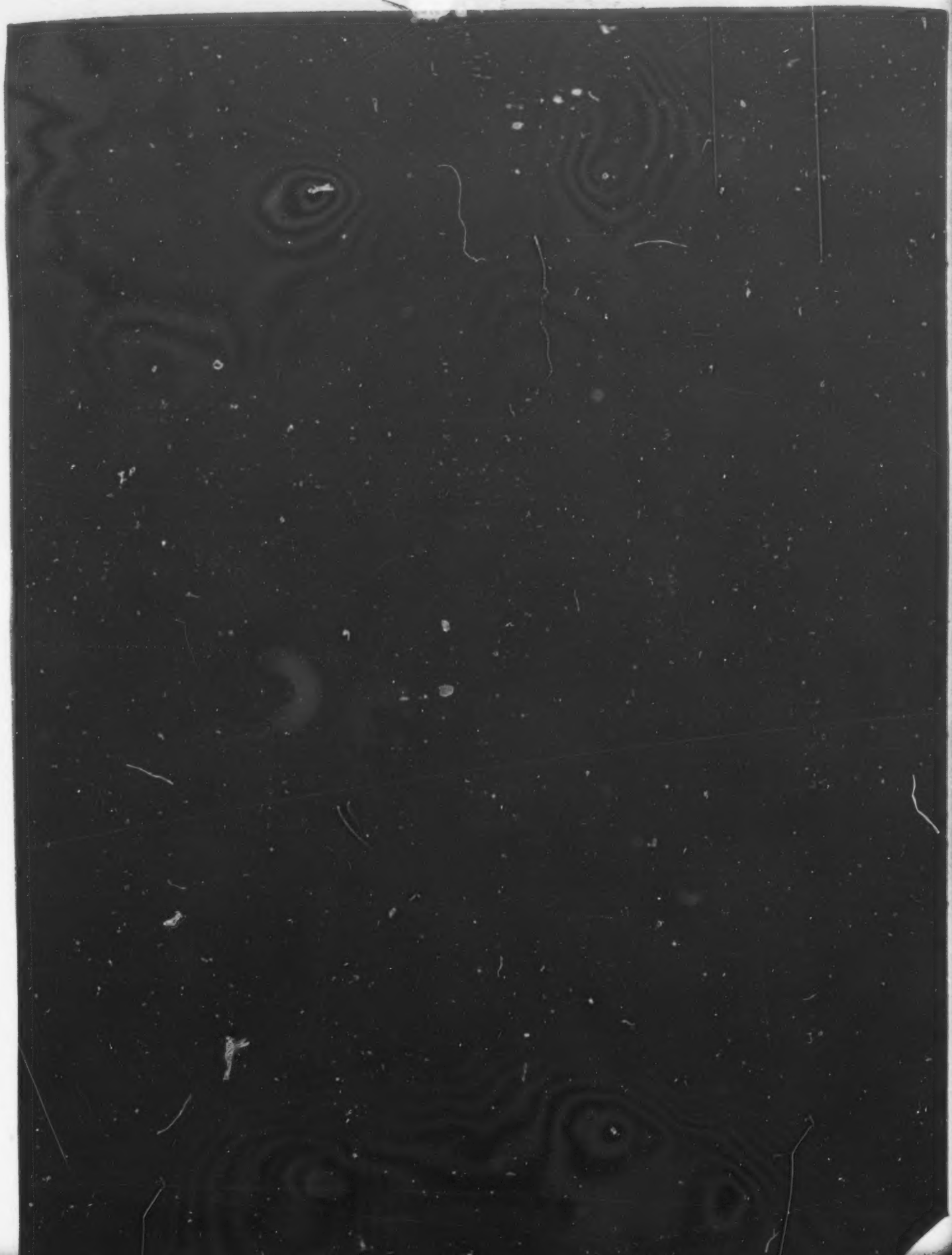

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM
SYNTHESIS OF HIGHWAY PRACTICE **40**

STAFFING AND MANAGEMENT FOR SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACT ASSESSMENTS

RESEARCH SPONSORED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS IN COOPERATION WITH THE FEDERAL HIGHWAY ADMINISTRATION

AREAS OF INTEREST:
TRANSPORTATION ADMINISTRATION
PERSONNEL MANAGEMENT
URBAN TRANSPORTATION ADMINISTRATION

TRANSPORTATION RESEARCH BOARD
NATIONAL RESEARCH COUNCIL
WASHINGTON, D.C. 1977

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Research Council was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as: it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communications and cooperation with federal, state, and local governmental agencies, universities, and industry; its relationship to its parent organization, the National Academy of Sciences, a private, nonprofit institution, is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the Academy and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are responsibilities of the Academy and its Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The members of the technical committee selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and, while they have been accepted as appropriate by the technical committee, they are not necessarily those of the Transportation Research Board, the National Research Council, the National Academy of Sciences, or the program sponsors.

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PREFACE

There exists a vast storehouse of information relating to nearly every subject of concern to highway administrators and engineers. Much of it resulted from research and much from successful application of the engineering ideas of men faced with problems in their day-to-day work. Because there has been a lack of systematic means for bringing such useful information together and making it available to the entire highway fraternity, the American Association of State Highway and Transportation Officials has, through the mechanism of the National Cooperative Highway Research Program, authorized the Transportation Research Board to undertake a continuing project to search out and synthesize the useful knowledge from all possible sources and to prepare documented reports on current practices in the subject areas of concern.

This synthesis series attempts to report on the various practices, making specific recommendations where appropriate but without the detailed directions usually found in handbooks or design manuals. Nonetheless, these documents can serve similar purposes, for each is a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems. The extent to which they are utilized in this fashion will quite logically be tempered by the breadth of the user's knowledge in the particular problem area.

FOREWORD

By Staff
Transportation
Research Board

This synthesis will be of special interest and usefulness to transportation administrators and others seeking information on staffing and management required to address social, economic, and environmental concerns. Detailed information is presented on management activities and procedures undertaken by transportation agencies.

Administrators, engineers, and researchers are faced continually with many highway problems on which much information already exists either in documented form or in terms of undocumented experience and practice. Unfortunately, this information often is fragmented, scattered, and unevaluated. As a consequence, full information on what has been learned about a problem frequently is not assembled in seeking a solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem. In an effort to correct this situation, a continuing NCHRP project, carried out by the Transportation Research Board as the research agency, has the objective of synthesizing and reporting on common highway problems. Syntheses from this endeavor constitute an NCHRP report series that collects and assembles the various forms of information into single

concise documents pertaining to specific highway problems or sets of closely related problems.

Since passage of the National Environmental Policy Act of 1969 and the Federal Aid Highway Act of 1970, most transportation agencies have had to reassign existing staff and hire additional staff or consultants to assess and document social, economic, and environmental impacts. This report of the Transportation Research Board describes and evaluates current management activities and procedures used by federal, state, regional, and local transportation agencies to respond to these concerns. The synthesis is based on a survey of agencies to determine: (1) how they address the need for additional expertise; (2) how they coordinate with other agencies to acquire input; (3) how they achieve an interdisciplinary approach; and (4) how they ensure early and continuous citizen input.

To develop this synthesis in a comprehensive manner and to ensure inclusion of significant knowledge, the Board analyzed available information assembled from numerous sources, including a large number of state highway and transportation departments. A topic panel of experts in the subject area was established to guide the researchers in organizing and evaluating the collected data, and to review the final synthesis report.

This synthesis is an immediately useful document that records practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As the processes of advancement continue, new knowledge can be expected to be added to that now at hand.

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Information on current practice was provided by many highway agencies. Their cooperation and assistance was most helpful.

STAFFING AND MANAGEMENT FOR SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACT ASSESSMENTS

SUMMARY

The American public, through the National Environmental Policy Act of 1969 (NEPA), have indicated that before any federally financed project can be built, they and their decision makers must be fully informed of the impact of the project on the social, economic, and natural environment. The Federal-Aid Highway Act of 1970 further expanded this policy insofar as highway construction is concerned.

As a result of the Act, each state developed an Action Plan that outlines the process by which full citizen and community involvement is to be achieved and shows evidence that adequate consideration is given to all possible effects of proposed highway projects on the social, economic, and natural environment. One goal of the Action Plans was to create a methodology of management in each state to properly administer the assessment of environmental impacts.

This synthesis covers the current practices of state highway agencies in their approach to staffing and management to dispatch this responsibility. A variety of procedures has been discovered out of which certain general approaches evolve.

In addition to an interdisciplinary team, all states have a central office staff who, at the minimum, are responsible for making sure that an environmental impact statement (EIS) is prepared for each major project and that it proceeds through the necessary reviews and clearances, including those of the Federal Highway Administration (FHWA). At the maximum, the central staff is responsible for the preparation of all environmental assessment reports and environmental impact statements as well as the complete administration of such documents. This includes preparing the guidelines and procedures, performing the field studies and analysis for all technical reports, preparing and reviewing the EIS, resolving all comments during the review process, either holding or assisting in public meetings or hearings, and arranging for or conducting staff environmental training.

All states should initiate environmental assessments at the systems planning stage; however, some still start at the project planning phase. Direct involvement of the environmental group is most often terminated with the preparation of plans and specifications. Although the environmental group may monitor further project activities, the design or project engineer is responsible for conformance with the EIS. Implementation during construction and during maintenance and operation is usually the responsibility of the functional group; however, there is a trend toward making the environmental unit responsible for monitoring the implementation of the requirements at all stages. Special environmental studies of the existing system and roads are also made by the environmental unit.

Most states have used existing personnel to staff environmental units and have

retrained them to fulfill the interdisciplinary approach to project development. This is true for most disciplines except sociology, archaeology, and biology. The need for these disciplines is met mostly through new hires, through the use of consultants, or through coordination with other state agencies.

Training of existing staff engineers, planners, economists, right-of-way agents, and technicians has been extensive. Such training has primarily been done in-house with assistance from other governmental agencies and private and academic consultants. Some use has been made of college and university short courses; in addition, a few states have supported employees attending on-campus degree courses in the environmental field.

Perhaps the two most significant events from a management viewpoint as a result of NEPA have been the closer involvement of the public and the development by the highway agencies of effective methodology to create community involvement. A secondary benefit has been the generation of a closer working relationship between the various functional divisions of highway agencies. The interdisciplinary team approach required by the Action Plans has emphasized the fact that the preliminary engineering studies and the environmental studies are so interrelated as to be inseparable.

During the years immediately following NEPA, the states were in the difficult position of developing their environmental assessment capability while at the same time making environmental assessments of projects that already were in the late stages of design. Now the majority of the states are moving the environmental assessment effort into their early program and systems study phases. This results in early identification of environmental problems and smoother project development.

CHAPTER ONE

INTRODUCTION

BACKGROUND

The National Environmental Policy Act of 1969 (NEPA) assures all Americans "safe, healthful, productive, and aesthetically and culturally pleasing surroundings." Like most policies, it is hazy in the area of implementation; as far as highways are concerned, however, the Federal Highway Administration (FHWA) has established guidelines and processes for compliance with this policy in the planning, design, and construction of highway projects.

Federal-Aid Highway Program Manual 7.7.1 requires all states to develop an Action Plan, the purpose of which is "to assure that adequate consideration would be given to possible social, economic, and environmental (SEE) effects of proposed highway projects and that the decisions on such projects are made in the best overall public interest." In the broadest sense, environmental impacts can occur and must be assessed for the planning, design, and construction phases as well as the operational phase. All of the states have filed Action Plans with FHWA and are implementing their plans; most have either revised or are considering revisions.

In addition to NEPA, many states have adopted their own environmental protection acts as a means of extending environmental protection to all publicly funded projects. Some have extended the same policies to the private sector, primarily through the control of permits.

The National Environmental Policy Act called for the creation of the Council on Environmental Quality (CEQ) to advise the president on environmental matters and required the preparation of environmental impact statements (EIS). The purpose of an EIS is to provide the most useful information to decision makers and the public so that they can (a) identify the environmental impacts of the project alternatives facing them, (b) weigh their significance and possible treatment, and (c) consider the negotiable points among the project alternatives. Various guidelines affecting transportation projects have been prepared by federal agencies such as CEQ, the Environmental Protection Agency (EPA), and FHWA to assist in the preparation of the EIS.

In addition, the courts have been very active in the environmental field, creating a variety of opinions that have the effect of law. All public agencies spending federal funds for construction should be aware of all federal laws, rules, and regulations. In addition, they shoud be aware of their own local laws, rules, and regulations as well as any pertinent legal opinions. Most states have assigned a staff lawyer to the environmental activity so that the agency can be informed on legal matters relating to the environment. It is absolutely necessary that agencies be fully aware of current actions both nationally and locally.

Since NEPA was passed by Congress, most transportation agencies have had to reassign staff and hire additional staff or consultants not only to prepare environmental assessment reports but also to recognize and study problem areas never before considered as important by the public. This requires an interdisciplinary approach.

This synthesis reports on the management activities various transportation agencies—state and local—have undertaken to comply with these new concerns. Staff changes, additions, and training are reported. Procedures used to coordinate the input of other state, federal, and local agencies, and citizen groups; steps taken to ensure early and continuous citizen input; and ways to ensure an interdisciplinary approach to the preparation of an EIS are also reported.

Several states and local agencies were selected and interviewed in the development of this synthesis. In addition, a review of the Action Plans and organization charts of many other states was also completed. Roughly, insofar as determining environmental factors is concerned, the states are divided into three general management categories: (a) those that perform almost all environmental impact activities in-house with little use of consultants, (b) those that use a combination of in-house staff and consultants or other nonstaff support, and (c) those that obtain practically all needed activities (with the exception of administration) from the outside.

Outside expertise is obtained from several sources but primarily from private and academic consultants, academic institutions, and other governmental agencies. Other than these three generalities, there are few similarities among organizations. Organizational traditions and local public attitudes seem to be the strongest factors governing an agency's placement of the environmental unit within the organizational structure and the responsibilities that it assigns to this unit. Case studies of the organization and staffing of several states are included in Appendix C. Additional information on other states is included in Appendix D.

Local agencies are too varied for objective reporting; however, the larger entities have organizations similar to highway agencies. Their staffs are heavily oriented toward urban problems, and their administrative contacts are with a broader range of federal agencies. Insofar as road projects are concerned, the smaller agencies tend to request that the study and reporting be done by the state highway agency.

DEFINITIONS

A-95 CLEARINGHOUSE.—Those agencies and offices in states, metropolitan areas, and multi-state areas that perform the coordination functions called for in Office of Management and Budget (OMB) Circular A-95.

ENVIRONMENT.—The aggregate of all external conditions and influences (aesthetic, ecological, cultural, social, economic, historical, etc.) that affect human or other life.

ENVIRONMENTAL ASSESSMENT.—A study or studies to provide detailed information concerning the effect the proposed action will have on the environment.

ENVIRONMENTAL IMPACT STATEMENT (EIS).—A written document in response to 42 U.S.C. 4332 [Section 102(2)(c) of the NEPA of 1969] containing an assessment of the significant effects a major action will have on the quality of the human environment. A preliminary EIS is called a draft EIS. The final EIS contains the same information as the draft but with revisions reflecting comments received from circulation of the draft EIS and the public hearing process.

MAJOR/NONMAJOR ACTION.—Classification of a project determined by agreement between the highway agency and the FHWA. A major action requires an EIS; a nonmajor action does not. A major action is one of superior, large, and considerable importance, involving substantial planning, time, resources, or expenditures.

NEGATIVE DECLARATION (ND).—An environmental document supporting a determination that a proposed major action will have no significant impact upon the quality of the human environment.

SECTION 4(f) STATEMENT.—A document supporting the use for transportation purposes of certain publicly owned park, recreation, historic, or wildlife land as required by Section 4(f) of the 1966 Department of Transportation Act as amended [49 U.S.C. 1653(f)]. The statement also supports the determination that the proposed action includes all possible planning to minimize harm.

CHAPTER TWO

THE ENVIRONMENTAL ASSESSMENT PROCESS

TYPES OF STUDIES

Assessment of the impact of a transportation system or project upon the environment is extremely complex and requires a series of studies by several disciplines.

In addition to comprehensive engineering studies, impacts of the project on the complete social, economic, and natural environment must be reviewed in depth. This means that expertise must be available for (a) studies into such social factors as population, land tenure, housing, cultural aspects, existing transportation, recreation, political and public institutions, surrounding aesthetics, anthropological or archaeological value, and impacts on historical places and artifacts (National Historic Preservation Act); (b) studies into such economic factors as income levels, labor force, business and industry, land values, tax base, and public services; and (c) studies such as impacts on geography, geology, biology, or air, noise, and water quality. There are also special studies required, such as a Section 4(f) statement, when a proposed project encroaches on publicly owned land from a public park, recreation area, historic site, or wildlife and waterfowl refuge of public significance. In other words, the impact of the transportation system or project on the complete human environment must be determined.

CHRONOLOGY OF THE PROCESS

The following steps are basic to obtaining FHWA environmental clearance to proceed with a federally financed highway project. These steps must be considered as elastic in that the environmental assessment process is so interrelated with programming and planning as to be completely inseparable.

Many states are approaching all projects as if federal money were being used. Thus, they are in a position to use whatever type of financing may later develop.

Environmental clearance usually occurs as follows:

1. Project development initiated.
2. Determination made whether federal approvals are involved.
3. Interdisciplinary team determines need for environmental studies and these are initiated.
4. Studies are completed, following which draft EIS (or ND) is prepared. If needed, a 4(f) statement is also made.
5. Determination made and FHWA concurrence obtained concerning the project's major/nonmajor action status. If the project is determined to be major, FHWA concurrence is also sought for determination of significant/nonsignificant effects.
6. Notice of Intent sent to A-95 clearinghouse for circulation.
7. Draft EIS (or ND) forwarded to FHWA for review, countersigning, and approval to circulate.
8. Approved statement sent to all interested parties, including A-95 clearinghouse. Public notices of its availability are issued. Copies of all environmental documents are made available at appropriate public places. (Normally, 1.5 to 2 years have elapsed by this time.)
9. Review comments are received, reviewed, and discussions prepared.
10. Public hearings held. (Review comments can be received for a brief period after public hearings.)
11. Interdisciplinary team considers all comments, both written and oral, and initiates additional studies as needed.
12. Final EIS (or ND) is completed and is submitted to FHWA for approval along with design features. This action is publicized. (Normally, 2 to 3 years have elapsed by this time.)
13. After approval by FHWA (one to three months), the final EIS (or ND) is distributed to all interested parties. This signals environmental clearance of the project.

Highway agencies are finding that environmental assessment requirements dominate the early time frame of a project; right-of-way acquisition processes dominate after the final EIS is accepted. Engineering can progress at a regular pace over this five-, eight-, or in some cases ten-year period. The key controls are the early preparation of location studies in order to initiate the draft EIS as early as possible. After all approvals of the EIS, the project is monitored through final design, construction, and operation to ensure inclusion of all environmental requirements.

THE EIS

The EIS is the document that provides general engineering information and environmental data to decision makers and also to the public. In order to furnish backup information for an EIS, many specific supplemental environmental documents and engineering reports are needed in the many areas previously outlined. The EIS can be viewed as a summary document written so as to be understood by the nonprofessional. It is the preparation of all of these documents that demands the services of many different disciplines. There is a trend, especially among those states with transportation departments, to combine the transportation planning and environmental studies into one report. Thus when location and project design start, the major environmental matters are well documented.

The EIS is a summary report of all actions; it provides documentation of the study and full disclosure to decision makers. A summary of the EIS study is filed with FHWA. It also includes a discussion of the impact of the "no build" and any other alternatives considered. Decision makers use

all the information to determine the most appropriate course of action after the effects and issues are identified and evaluated in the EIS. The various support documents are prepared for reference and may or may not be used during the various review processes.

If the effects of a project are determined to be insignificant, this is supported by a negative declaration (ND). Although an ND is usually a shorter document, the process of assuring its validity is as comprehensive as for the EIS. Supporting documents for NDs must show a comprehensive consideration of all elements. Appendix B is a checklist one state uses to assure that nothing has been overlooked in making the ND decision.

After it is determined that a project will involve federal moneys, a series of environmental documents are prepared for review by FHWA. The first document prepared by most states covers the initial study by an interdisciplinary team to determine whether a project is major or nonmajor. Most states find that this decision is best made as early as possible on an informal basis in concert with an FHWA representative. Following this review, practically every document may be subject to federal review by a variety of agencies such as FHWA, EPA, CEQ, A-95 clearinghouse, or to review by other state agencies designated by the governor or various rules and regulations.

The draft environmental impact statement documents all studies and information that identify and assess the significant effects and issues a major action may have upon the quality of the environment. The draft EIS is usually prepared at the earliest practical time prior to the first significant point of decision in the project development process. In addition to preparation for federal agencies, the environmental support documents may be subjects of public hearings, public review and comment, and review and comment by various interested groups both public and private.

The final environmental impact statement contains the same information as the draft EIS but is augmented by appropriate revisions and additions reflecting comments received from circulating the draft EIS and from the public involvement process. Documented information from the public involvement process is of particular value to the credibility of the EIS. During public involvement, nearly all aspects of the environmental impacts of a proposed project are discussed by the transportation agency. Successful solution of all environmental issues posed by interested groups or individuals at a public meeting or hearing is a good indicator of a thorough environmental assessment. Minutes of such a meeting can provide detailed explanations of impacts that may not have been outlined elsewhere in a single document.

FHWA approval of the final and any supplemental EIS constitutes environmental clearance for the project.

CHAPTER THREE

MANAGEMENT OF THE ENVIRONMENTAL UNIT

STRUCTURE

The superficial organizational structure of most highway agencies appears to be somewhat similar; however, an investigation in depth reveals extreme differences. For instance, most states appear to be organized around the central office with a decentralized district format. However, in one state the district handles only the maintenance function, whereas in the next state the district is responsible for everything in its territory from systems planning to maintenance and operation. For this reason, management of the environmental assessment work varies significantly among the states. This makes it difficult to express the state of the art in the form of a few examples. Therefore, it appears best to discuss the approaches used in assessing each environmental element and how these elements fit into the basic organization.

The National Environmental Policy Act requires a systematic, interdisciplinary approach that ensures the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making for projects that may have an impact on the environment. In addition, the development of any federally financed project must involve full citizen and community participation.

In order to accomplish these requirements and meld them into a functioning organization, the states have developed (a) interdisciplinary teams to comprehensively consider each project and (b) environmental staffs to provide administrative and multidisciplinary expertise in the over-all social, economic, and natural environmental fields.

The responsibilities of the interdisciplinary groups vary as to detail, but essentially their assignment is to review all projects and recommend all environmental actions for and classifications of each project. Such teams usually consist of persons from various scientific and social disciplines and range from formal bodies with membership from all state agencies to internal, interdisciplinary teams formed within a highway agency to continuously review a specific project. The advantage of the formal, state-level review board proc-

ess is that the other agencies involved are usually budgeted for the review work and focus on problem areas early in the process. Most states, however, tend to use internal, interdisciplinary teams either on a program or project basis and rely on the A-95 review process to involve other state agencies. Even in this latter case, those state agencies with specific concerns, such as fish and game, environmental pollution, public health, etc., are usually involved early on an advisory or consultant basis.

Interdisciplinary teams in no way dilute the responsibility of the environmental unit, which may serve as staff to or have membership on such a group. When the interdisciplinary group is at the state level, the highway agency environmental group usually serves as the coordinating unit to furnish the complete environmental information to the group and to transmit critiques to the highway agency staff.

The basic organization of most environmental units consists of three sections: one to handle the communications or administrative effort, one to cover socio-economics, and one to cover the scientific functions.

Most environmental units are located within preconstruction bureaus or divisions. (In some states, these divisions may be called project development or design.) Some states have environmental units located in other divisions, but this seems to be more as a work-leveling rather than an organizational device. There does seem to be a trend, especially in departments of transportation, to place the SEE units in the transportation planning area rather than in project development. The logic behind this is that early discovery of all possible environmental effects leads to a smoother project development period.

Many states have begun to modify their highway departments to transportation agencies in order to consider the entire state transportation system rather than the highway alone. The systems planning staff in the typical department of transportation organization is usually separate from the highway planning group because the former is trying to determine not only the need for transportation but also the mode. Because such planning studies involve an environmental study, many agencies are now attempting to make the systems information of specific value for later location studies and for the preparation of project environmental assessments. In addition to engineers and planners, the staffs of systems planning units usually include economists and geologists. Social and environmental planners may also be included, especially in units concerned with urban areas. The numbers, of course, depend on the workload. With the exception of air quality, the natural environmental impacts need research and analysis but do not require detailed field study until the project study phase.

FUNCTION

Environmental units are assigned the responsibility of the complete environmental assessment of a department; they work closely with and in some cases are a part of the systems planning group. This helps to ensure the early identification of environmental issues. In addition to the responsibilities of environmental units previously discussed, many states place the responsibility for obtaining all permits in this unit. Practically all permits now require a complete or at least some elements of an environmental study; engineering data, such as bridge clearances, are almost incidental.

When environmental units were first organized, because of the traditional position of the design engineer, the responsibility for coordination of all reports and for liaison with outside agencies, as well as final handling of the EIS, was the designer's. Now the trend seems to be to place complete environmental assessment responsibility in the hands of the environmental unit with the project development engineer being responsible for the draft EIS and the incorporation of the findings in the plans and specifications. There is also a trend toward building environmental units with a full complement of personnel from all of the disciplines. Many of these personnel are retrained engineers or technicians, especially in the environmental planning field and in scientific areas such as air and noise analysis.

In the fields of economics and sociology, most states prefer to have such experts on the staff rather than to hire on a consulting basis. Impact studies of historically significant items are almost exclusively handled by the official state historical agency. Many state historical agencies have an archaeologist on the staff who can perform such studies. However, many states are finding it more efficient to have an archaeologist in-house.

The general philosophy of state highway agencies insofar as staffing to meet their obligations under NEPA and the 1970 Federal-Aid Highway Act is concerned is to perform as much of the work in-house as is efficient. At the minimum, this means writing the EIS and performing all administrative work involved in the preparation, review process, and completion of the environmental assessments. This work is usually performed by environmental planners, engineers, and writers with appropriate clerical and technical assistance. At the maximum, this means performing in-house all social, economic, and natural environmental studies, analyses, and reporting, as well as the analysis and writing of the EIS and all of the necessary planning and administrative work involved. This requires a complete multidisciplinary staff. The types of environmental assessments actually performed by the staff in any particular agency depend on workload and many other circumstances within that state.

The environmental units of many states now prepare manuals outlining pertinent laws, rules, regulations, procedures, standards of preparation, methodology, guidelines, etc. In large states with central office administration and with preparation of the environmental documents delegated to districts, the manuals are extensive and detailed. In states where the responsibility is entirely centralized, the manuals may consist of an informal collection of local memoranda and directives, the state administrative manual, the *Federal-Aid Highway Program Manual*, and special federal regulations such as Section 4(f) of the 1966 Department of Transportation Act, the National Historical Preservation Act, and applicable Coast Guard rules and regulations.

The central office unit responsible for all reviews and

clearances of the environmental documents usually has a specific form for each project listing all submittal and clearance dates. Extensive use is made of checklists of agencies (public, private, and individual) scheduled to receive copies of documents for any purpose.

At the executive level, the major management problem seems to be how to minimize the amount of red tape and eliminate the duplication of effort involved in the environmental process. The suggested solutions are a certification process, more mutual trust, and an audit program. Although the details of a certification process would need careful development, it has been suggested that a certificate could be substituted for all federal approvals. In other words, if the FHWA felt a particular state was completely competent, it would provide certification permission. Such a process would be subject to audit by FHWA and, if abused, would result in the privilege being withdrawn.

Another management tool that most states have used for a long time is a flowchart of some type to plot the various components that influence their planning process. The sequencing of all of the environmental documents is presented in such diagrams.

A strong concern of middle management is the building of career opportunities for a multidisciplinary staff. Several states are establishing a complete promotional series of grades in the classification of environmental planner (or by some other name, such as environmentalist) in which they are lumping all such staff disciplines (see Chapter Five). Michigan has eliminated this problem by using the federal grading system for establishing and classifying positions.

RELATIONSHIP WITH OTHER DIVISIONS

During the early 1970s, the majority of states were in a quandary as to how to incorporate environmental findings into projects already in the planning process prior to NEPA. It was a trying period for designers who were attempting to get jobs out within estimated engineering costs and still satisfy what seemed to them to be unreasonable demands by the environmental units. The SEE units during this time were only as effective as heavy outside pressure dictated. SEE groups are now making environmental information available during the initial periods of projects and are much more effective in influencing planning. Most highway agencies indicate that their critical path charts are no longer primarily influenced by engineering but rather by environmental requirements in the early stages and right-of-way during the latter stages. Engineering can proceed smoothly provided environmental concerns are discovered early.

Following enactment of NEPA in 1969 and the Federal-Aid Highway Act in 1970, things were rather hectic because Action Plans had to be prepared, environmental groups formed, and projects that had been planned for quite a while had to be completed and advertised. Various expedients, such as fact sheets, were implemented. This approach is no longer acceptable. The complete SEE assessment is now necessary as a fact of federal project development. Many states have adopted their own environmental protection acts and have set up internal management machinery to assure compliance. This means that those states so involved must make sure that all projects (not only federally financed) are environmentally assessed. This has tended to strengthen the environmental units by involving them in the complete planning and design process.

In most highway agencies it is the responsibility of the designer or project engineer to incorporate all environmental factors into plans and specifications. The construction or resident engineer must make sure that the contractor complies with the contract; the maintenance engineer is responsible for any long-range environmental commitments. Monitoring of plans, specifications, and other contract documents for SEE assurance has, in most cases, been assigned to the environmental staff. Few states have as yet assigned such responsibility beyond the preconstruction phase; however, there is a trend to do so. Many of the environmental specialists have been assigned special problems during the operation period (e.g., abatement of pollution caused by surface runoff contaminated by salts, pesticides, traffic spills, and drippings).

Because funds for highway work have fallen extremely short of needs, highway agencies have almost eliminated new construction. They are concentrating instead on reconstruction, resurfacing, and replacement, with some widening. In addition, safety projects are in the forefront. These all require some degree of environmental assessment, although not as extensive as those for large, new projects.

In some of the larger agencies, funding cutbacks have led to environmental staff reductions; in general, this has resulted in readjustment of the workload. In the past, only a few of the environmental units have had the opportunity to perform any monitoring tasks. When staff time becomes available, this is now being performed both in the broad area of monitoring the requirements of the Action Plan and also in following the EIS requirements for each project.

Although the development of community involvement may or may not be a responsibility of the environmental unit, it is being used effectively in the process. In most public hearings, various representatives of the environmental group are requested to explain their specific studies. They may also prepare news releases, publications, television programs, movies, filmstrips and other publicity approaches. Some states are also using the workshop idea to develop citizen involvement. In this technique, citizen groups with specific interests, such as racial, ecological, and economic, are formed into workshops to consider a specific impact of the project. Environmental unit personnel are assigned to such workshops to furnish data and interpretations.

CHAPTER FOUR

STAFFING THE ENVIRONMENTAL UNIT

The basic organization of an environmental staff includes environmental planners, environmental engineers, environmental writers, and technical and clerical personnel. This basic staff can then be augmented as discussed in the following sections. Several states' organizations are shown in Appendixes C and D, and a composite organization is discussed in Chapter Six.

SCIENTIFIC

Air Quality

The measuring of air quality and its projection to the future require the use of highly sophisticated equipment and a well-trained staff. Although all states have an environmental engineer or planner on board who is knowledgeable in this area, many states also have a meteorologist. Only states with at least a moderately large program, however, can support a complete staff in this area. Thus, many alternatives are used, including consulting firms that specialize in this work. Many states use another state agency to do this work. Because most states have an air pollution agency either as a department or part of the public health or environmental department, an agreement can usually be worked out to have this service provided on demand. It is usually important that such units have a good estimate of the needs of the transportation agency because additional personnel often must be justified during budget time.

Whenever this work is performed in-house, the technical staff that handles noise and water quality surveys are also trained in air quality monitoring.

Noise

The analysis of ambient noise measurements is a complex science, primarily because of its relationship to human reactions. However, in recent years the International Standards Organization has accepted a single measurement standard. The actual measurement of traffic noise is now relatively straightforward, providing the survey technique is properly disciplined. Noise meters are well designed and rugged and are available in various configurations for either recording or meter readouts.

Training has been provided by FHWA and is also available from the private sector. Because noise meters are relatively inexpensive and training for routine ambient-noise survey work is fairly straightforward, many states are equipped and staffed to do this work. Engineers and technicians who do this work are usually housed in the scientific section of the environmental unit. The calculations and plotting of noise contours for the projected traffic is usually the responsibility of the designer. Computer programs acceptable to the FHWA are available for this work. Acoustical experts are occasionally hired by a state, especially if the situation is highly complex or if noise is the subject of strong controversy. Neither universities nor other governmental agencies seem to play much of a role in this function, except for the FHWA role in training.

Water Quality

The majority of the states have provided extensive training of existing personnel; there is, thus, little need for outside personnel to analyze or report on water quality. Siltation and erosion during construction are the prime concern; however, special studies concerning contamination from surface runoff salts and pesticides are becoming important. Siltation and erosion are covered by a statement in the EIS and implemented by the construction department. Some states have stricter water quality standards than others and are aggressive in their enforcement. Under such conditions, it is necessary for the highway agency to make upstream and downstream sampling before, during, and after construction. Sampling can be performed by a well-trained engineering technician. The analysis, depending on standards, can be extensive. This requires laboratory facilities either in-house or available on a hire basis. Many highway agencies have in-house laboratories; some engage this service from private laboratories or other public agenices. The choice depends on economic considerations.

Ecology

At least one biologist is included on the central office staff of most states. Because ecology is basically a biological science requiring the knowledge of the relationship between organisms and their natural environment, some states have returned selected staff people to colleges for training in this specific area. The majority have employed new, academically trained biologists with ecological training. Even those states performing the environmental assessment work in their districts rely on a central office ecologist to train and advise their district people. Several states have aquatic biologists on their staffs, especially where recreational streams pose a major problem. Whether or not a staff ecologist is on board, many of the states obtain additional help in this field from other state agencies. Colleges and universities are also used as a source but to a small degree; there is almost no use of private consultants in this field. The number of biologists depends on the workload.

Energy

Energy considerations usually arise during the mode-selection stage of systems planning in most states. The responsibility for obtaining, interpreting, and reporting the pertinent data is normally given either to an economist or

to an engineer or geologist with background or training in economic research. It is probable that nationwide interest in this area will override local interest.

Geology

In most states, natural environmental hazards and geologically related impacts are covered in the preliminary engineering study reports. The environmental writer can obtain information from this source; however, a staff geologist is usually retained in the central office environmental unit for special studies, consultation, and review. Other state agencies are often consulted in this field, especially for economic geology and seismology. Otherwise, consultants are seldom necessary.

ECONOMIC AND SOCIAL

Economic

Most states have economists either in the environmental unit or on their planning staff. Because of training and workload conflicts, the use of economists from other agency divisions does not seem to be sufficient for an environmental unit. In order for an economist to be effective in environmental impact studies he or she must be skilled in community economic analysis, not merely in financial planning. Consultants, usually from the academic community, are used extensively in this field on a project-by-project basis. Consultants from other state agencies are also used, especially for special expertise such as in agriculture.

Social

Of all the new disciplines that require staffing by highway agencies, social planning is the most universal. Agencies report that members of this discipline especially skilled in demography are absolutely necessary in urban projects. Practically all states have at least one social analyst on their central staff and if the district workload is sufficient, additional analysts may be employed at this level. For a small workload, the combined talents of a socio-economist can be effective. Although a state may have staff sociologists, most also acquire additional personnel on an intermittent basis from a local college or university. This is especially useful to supplement their own staff on a local project.

HISTORY AND ARCHAEOLOGY

Practically all states use the services of other state agencies in these fields, usually those of the state historical society or museum. In some states experts are located in the state university. In any case, such organizations are manned by highly skilled people who are already well aware of most of the historical problems to be encountered by the project. Many of the historical agencies also have an archaeologist on board who can provide this service. With few exceptions, this has been found to be the most credible and efficient method of obtaining historical and archaeological impact assessments. Unfortunately, all state historical agencies do not have a staff archaeologist; as a result, some highway agencies are now employing an archaeologist on their staffs.

CONSULTANTS

The use of consultants (both from the private and academic sectors) is extensive in the majority of states as well as local agencies. Such use is primarily for expertise or credibility in a particular subject or for performing the research, field work, or preparation of a specific technical report, such as a sociological or air quality study. During the catch-up period following enactment of the Federal-Aid Highway Act in 1970, consultants were used extensively to prepare the complete assessment, including the EIS. Even now consultants are occasionally used for such purposes if the project is highly controversial or if a peak workload can not be handled by staff. Unfortunately, contracting the final EIS preparation to consultants has not been satisfactory. This is because consultants have some difficulty keeping abreast of the many laws, rules, regulations, and court decisions, as well as the constant changes that occur in this field. States have found that it takes from 50 to 100 percent of the effort in additional staff work when the final EIS is prepared by outside contractors. Consulting firms have been employed very successfully in preparing the complete environmental assessment under the direction of the interdisciplinary team, with the writing of the final EIS by the agency's environmental staff.

OTHER GOVERNMENTAL AGENCIES

There is, of course, a great deal of involvement of other governmental agencies in the environmental assessment process. This is true especially for the A-95 review and comment; however, the governmental agencies that are used as consultants to the highway agencies are primarily other state agencies. Some services are obtained from federal agencies, such as the Environmental Protection Agency or the Departments of Interior and Agriculture. There is also some use of the services of cities, counties, and other local governmental bodies; however, this is sporadic and seems to depend on local expertise rather than on general availability.

Extensive use is made of other state agencies to prepare or advise in the preparation of specific technical reports. Use of such agencies in the fields of archaeology and history seems almost universal. Air quality studies are also often prepared by other state agencies. Many states also use other state agencies for ecological, economic, social, and water analysis. Some problems have developed in obtaining services from other state agencies insofar as timeliness and completeness of reports and reviews are concerned. This has been resolved in most cases by entering into a letter of agreement or other instrument for interagency cooperation. In this way the other agency can plan and budget for the extra effort to be provided. This means that an estimate of required services must be provided to the other state agency in time for inclusion in its budget. This could be a year to two years in advance of actual use of the service.

CHAPTER FIVE

CAREER DEVELOPMENT

TRAINING

The majority of the highway agencies use existing staff personnel in filling positions in their environmental units. This means that highway engineers and right-of-way agents, technicians, and other personnel need extensive training or retraining in such diverse fields as meteorology, noise technology, socio-economics, water analysis, report writing, communications, new administrative procedures, and, above all, attitudinal readjustment.

In-house training has been extensive in many states, with concentration on the ecology, specific technical procedures, and administrative processes, along with attitudinal courses. Instructors have been obtained from staff, other state agencies, and the private and academic sectors. Also, even though most states rely on other state agencies in the fields of archaeology, history, and somewhat in ecology, they hold in-house informative training sessions in these disciplines. Such courses are especially directed toward general staff rather than toward the environmental staff. Although seemingly insignificant, such training as instructing the maintenance forces in the proper disposal of waste has had excellent results; it also improves the highway agency's public credibility.

Universities and colleges throughout the nation have developed both degree courses and short courses in environmental subjects. These range from specific courses in subjects such as environmental law, urban geography, climatology, social environment, etc., to broader courses such as environmental planning. One of the more successful courses is an 18-unit curriculum developed by the California State University Consortium leading to a certificate in environmental planning. The course has been developed to meet the needs of both private and governmental entities. By attending classes only at night, the student can obtain a certificate within 18 months; if the student is otherwise prequalified, he can apply the 18 units to a 30-unit master's degree in environmental planning. The California Department of Transportation considers the certificate program a desirable feature for promotion through their new personnel series of environmental planner. Another very successful endeavor is the three-month certificate course at the University of Southern California's Environmental Management Institute. Other universities and colleges throughout the nation have developed similar successful curricula, such as the environmental seminars held at the University of Wisconsin.

The federal Environmental Protection Agency provides excellent instruction in various aspects of air quality. This training is furnished on a fee basis at the Research Triangle Park in Raleigh, North Carolina.

FHWA has conducted several nationwide seminars to describe and interpret the various laws, rules, and regulations pertaining to environmental assessments. In addition to these, it conducts various specific courses through its teaching arm, the National Highway Institute (NHI). The National Highway Institute, in accordance with its enabling legislation, seeks to ". . . develop and administer, in cooperation with State highway departments, training programs of instruction for Federal Highway Administration and State and local highway department employees engaged or to be engaged in federal-aid highway work." This mission is advanced through state use of 0.5 percent of highway construction funds, which may be diverted to training; through a scholarship/fellowship program for state and local personnel; through training FHWA employees; and through use of administrative funds to develop and conduct certain courses directly for federal, state, and local highway agency employees. Criteria used to determine the training to be supported are that courses must be (a) needed, (b) applicable to most of the states, (c) a furtherance of FHWA's mission, (d) responsive to new legislation or new policy, and (e) directed toward the implementation of new technology.

NHI has been especially active in the environmental field, conducting the following courses throughout the nation:

- Highway Air Quality
- Fundamentals and Abatement of Highway Traffic Noise
- Community Involvement, Phase I
- Community Involvement, Phase II
- Ecological Impacts of Proposed Highway Improvements
- Historic and Archaeological Preservation *
- Highways in the River Environment
- Social and Economic Considerations for Highway Improvements *
- Water Quality Workshops
- Highway Aesthetics *
- Preparation of Environmental Impact/Section 4(f) Statements

As indicated previously, the states believe that the greatest reward from training has been realized from their own in-house efforts. The following courses are examples of the in-house training being offered by various highway agencies:

- High-Level Resources Training for Management
- Advanced Management Supervision
- Environment and the Law
- Effective Communications
- Effective Writing
- Writing an Environmental Impact Statement
- Socio-Economic Assessment
- Archaeology

* In developmental stages.

Land-Use Planning
Environmental Planning
Basic Environmental Statistics
The Highway and the Environment
Wildlife Technology
Aquatic Biology Technology
Analysis of Water Quality for Highway Projects
Highway-Slope-Erosion Transect Surveys
Disposal of Erosion Materials
Impact of Transportation Systems on the Air Environment
Computer Programs for Analyzing Aerometric Data
Air Quality Analysis
Operation and Calibration of Air Monitoring Instruments
Air Pollution Meteorology
Air Pollution for Planners
Noise Impact on the Environment
Measurement and Analysis of Traffic Noise
Abatement of Highway Traffic Noise
Disposal of Waste Products
Proper Use of Pesticides
Management and Use of Salt

CAREER LADDERS

Definition of Series

The environmental planner, in addition to initial planning and development activities in systems or in project development, is an interdisciplinary team member or manager. Typically, the environmental planner will:

1. Make an environmental inventory and an assessment of existing social and natural environmental systems to be used as a data base upon which to plan and develop transportation systems in conjunction with local, regional, and state plans.
2. Prepare, review, and process environmental documents mandated by federal and state laws and regulations and, as a team member, assess the consequences to the environment of transportation alternatives. Formulate environmental mitigation measures for these alternatives.
3. Participate in the continuing development of multimodal transportation plans and projects based on statewide, regional, and local needs.
4. Identify research needs in the natural and social sciences as well as the environmental design arts; perform research within area of expertise as part of a research team; monitor and evaluate environmental research findings accomplished by nonstaff personnel and contract consultants.
5. Assist in the development of and participate in training programs in the environmental area.
6. Participate as a departmental representative on environmental issues at interdepartmental or intradepartmental meetings, public or private meetings and hearings, and legislative hearings.

Entry into this series is typically through the class of Environmental Planner I or from one of the environmentally related disciplines.

Factors Affecting Position Allocation

Factors affecting position allocation include degree of supervision received; variety and complexity of assignments; scope and complexity of responsibility; independence of action and level of decision-making authority level and variety of work contacts; degree of administrative and supervising responsibilities; and scope of program and policy implementation responsibility. Salaries should be competitive with the private sector.

Level Definition and Minimum Qualifications for Environmental Planner Series

Environmental Planner VI

Duties.—Plans, organizes, and directs in a large transportation agency a program for the study and reporting of all social, economic, and natural environmental effects of a transportation program.

Minimum Qualifications.—

Either 1

One year of experience in the state service performing the more difficult and complex work on special environmental projects or research studies as an in-house consultant; or managing an interdisciplinary team preparing environmental studies and environmental documents in a class at a level equivalent to that of Environmental Planner V.

Or 2

Experience: Six years of experience in conducting comprehensive environmental studies of statewide significance and in preparing environmental documents, at least one year of which must have been equivalent in level to work performed by an Environmental Planner IV in the state service.

And

Education: Equivalent to graduation from college. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

Environmental Planner V

Duties.—Plans, organizes, and directs in a small-to-medium-sized transportation agency a program for the study and reporting of all social, economic, and natural environmental effects of a transportation program. Under general direction, represents the department in environmental planning matters of statewide significance and is responsible for supervising the planning and executing of major environmental planning, analysis, and research programs in connection with environmental impact studies. (In a large agency, this is the program manager level.)

Minimum Qualifications.—

Either 1

One year of experience in the state service performing the more difficult and complex work on special environmental projects or research studies as an in-house consultant; or managing an interdisciplinary team preparing environmental studies and environmental documents in a class at a level equivalent to that of Environmental Planner IV.

Or 2

Experience: Five years of experience in conducting comprehensive environmental studies of statewide significance and in preparing environmental documents, at least one year of which must have been equivalent in level to work performed by an Environmental Planner IV in the state service.

And

Education: Equivalent to graduation from college. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

Environmental Planner IV

Duties.—Under general direction, plans and supervises the work of a multidisciplinary staff conducting comprehensive environmental studies. Or without supervising responsibility, acts as an in-house consultant performing the most difficult and complex work that is either critical to the department's basic mission or of statewide significance. (This is the full supervisory level.)

Minimum Qualifications.—

Either 1

One year in the state service performing environmental planning, environmental research analysis, or evaluation in a class at a level comparable to that of Environmental Planner III.

Or 2

Experience: Four years of responsible experience in directing or conducting environmental studies or managing an interdisciplinary team preparing environmental documents, at least one year of which must have been equivalent in level to work performed by an Environmental Planner III in state service. (A doctoral degree in environmental planning or environmental sciences may be substituted for three years of the general experience; a master's degree in environmental planning or environmental sciences may be substituted for two years of the general experience.)

And

Education: Equivalent to graduation from college. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

Environmental Planner III

Duties.—Under general direction, plans and carries out the details of the more difficult and complex studies. Such work may include serving in a lead capacity over lower-level personnel within the scope of particular studies. (This is the full journeyman level.)

Minimum Qualifications.—

Either 1

One year in the state service performing environmental planning, analysis, research, or evaluation in a class at a level equivalent to that of Environmental Planner II.

Or 2

Experience: Three years of responsible experience in environmental planning, research, analysis, or evaluation, at least one year of which must have been equivalent in level to work performed by an Environmental Planner II in state service. (A doctoral degree in environmental planning or environmental sciences may be substituted for the three years of required experience; a master's degree in environmental planning or environmental sciences may be substituted for two years of the general experience.)

And

Education: Equivalent to graduation from college. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

Environmental Planner II

Duties.—Under direction, performs environmental planning, analysis, and evaluation work of average difficulty; assists in conducting and preparing environmental studies; prepares reports and documents including environmental impact statements or negative declarations. (This is the intermediate working level.)

Minimum Qualifications.—

Either 1

One year of experience in the state service performing environmental planning, environmental research analysis, or evaluation or specialized study in a physical, biological, natural, or social science discipline in a class at a level equivalent to that of Environmental Planner I.

Or 2

Experience: Two years of experience in environmental investigation, analysis, and evaluation, at least one year of which must have been equivalent in level to work performed by an Environmental Planner I in state service. (A master's degree in environmental planning or environmental sciences may be substituted for the required experience.)

And

Education: Equivalent to graduation from college. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

Environmental Planner I

Duties.—Under supervision in a learner capacity, incumbent does the less responsible and less complex environmental work in connection with environmental planning and research and analysis. (This is the entry and trainee level.)

Minimum Qualifications.—

Either 1

A bachelor's degree in the social sciences, natural sciences, economics, engineering, or environmental design arts.

Or 2

Experience: One year of experience in social or natural environmental planning, environmental research analysis, or environmental evaluation.

And

Education: Equivalent to graduation from college. (Registration as a senior in a recognized institution will admit applicants to the examination; however, they must produce evidence of having fulfilled the requirements for graduation before they will be considered eligible for appointment. Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

CHAPTER SIX

CONCLUSIONS

The most effective environmental units seem to have the following characteristics:

- Clear delegation of authority and assigned responsibilities. Such units are authorized to review and monitor the environmental activities of all other departmental units. The environmental unit is responsible for all departmental environmental activities, such as making all environmental studies, providing expertise, reviewing and commenting on all environmental reports and discussions of others, and coordinating all involved administrative and management problems. The draft EIS is usually the responsibility of the project interdisciplinary team under the leadership of the project development engineer. The responsibility for the final EIS, including resolution of all comments and processing, is assigned to the environmental unit.
- The basic organization of such units is shown in Figure 1. Categories of expertise needed are (a) communications section—administrative assistants, environmental planners, communication experts, delineators, and report writers; (b) socio-economic section—sociologists, economists, archaeologists, anthropologists, and environmental planners; (c) scientific section—engineers, geologists, biologists, geographers, and technicians.
- Staffing ratios vary depending on local factors, such as size and consistency of program, geography and geology, urban or rural, number of review agencies, attitude of public, over-all agency organization, local laws, and other local conditions. However, certain generalities are apparent; for instance, in smaller agencies the staff usually consists of generalists, such as environmental planners and engineers, along with communication experts, sociologists, and economists. The number of technicians and clerks depends on the workload. Small agencies can most efficiently obtain expertise for interdisciplinary teams, assessment study, and reporting from consultants or other state agencies.

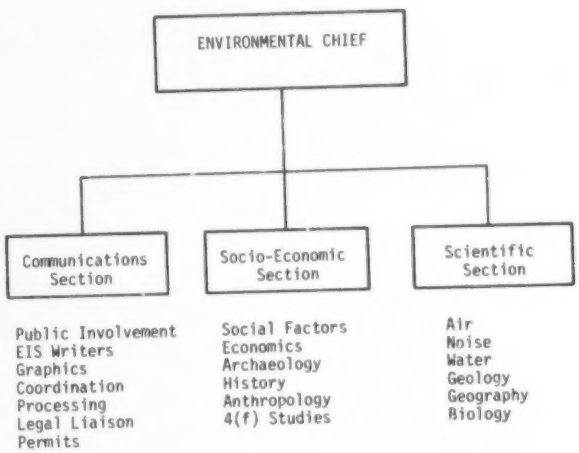

Figure 1. Basic structure of an environmental unit.

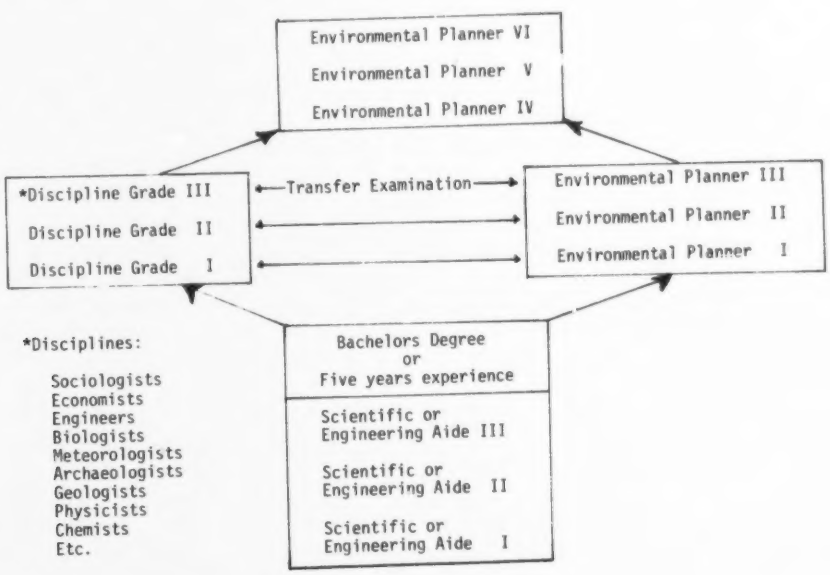

Figure 2. Environmental professional career ladder.

• Medium-sized agencies should consider a comprehensive staff of from 25 to 75 people, depending on the specific workload. A staff of this size could include economists, sociologists, biologists, meteorologists, engineers, geologists, environmental technicians, archaeologists, communication experts, and administrative assistants. If the state is highly urbanized, specialists such as urban planners, urban sociologists, and social psychologists are helpful. If a state is largely rural, agricultural specialists and agricultural economists should be available.

• Large organizations are usually decentralized operations; the districts are the responsible unit and the central office is the coordinator and administrator. The central office unit needs to be staffed wtih all the basic disciplines to furnish advice and consultation to the districts, to review the district work, to process the final EIS, to furnish training, and to coordinate all environmental activities. Both the central office structure and that of large districts is outlined in Figure 1. Smaller districts should organize more around the generalist (i.e., environmental planners, engineers, and technicians). The smaller districts can rely on central office to furnish special expertise.

• A realistic career ladder is difficult to formulate for a heterogeneous hierarchy such as is found in most environmental units. However, either of two solutions seems to work. The simplest solution is the use of the federal series. In those states with a specific classification system, a general series is useful, at least above the journeyman level. Up to the journeyman level in any discipline, the standard grading system can be used parallel to the regular disciplines. Beyond the journeyman level and in the managerial grades, all disciplines can be made eligible for a general environmental series (e.g., Environmental Planner). A suggested career ladder is shown in Figure 2.

APPENDIX A

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APPENDIX B

NEGATIVE DECLARATION
ENVIRONMENTAL FACTOR CHECKLIST

	Part 1 Effect		Part 2 Significant	
	A	B	C	D
	Yes	No	Yes/May	No
1. Regional and Community Growth				
Does the Project affect:				
A. Industry?				
B. Commerce?				
C. Population and Housing?				
D. Agriculture?				
E. Employment?				
F. Multiple and Joint Use?				
G. Life Styles?				
H. Growth Inducement?				
Is the project inconsistent with adopted community plans and goals as to any of the following elements:				
I. Land Use and Urban Growth?				
J. Circulation?				
K. Housing?				
L. Conservation?				
M. Open Space?				
N. Scenic Highways?				
O. Safety Aspects				
Will the project cause:				
P. Division or disruption of an established community?				
Q. Disrupt orderly planned development?				
2. Conservation and Preservation				
Is the project one which affects or will be affected by:				
A. Weather?				
B. Seismic Hazards and Safety?				
C. Public Water Supply?				
D. Groundwater?				
E. Flooding?				
F. Soil Erosion and Siltation?				
G. Plant Life Resources of the Area?				
H. Fish and Wildlife Resources of the Area?				
I. Cultural or Scenic Resources?				
J. Natural Landmarks? (Sect. 106)				
K. Park/Recreation Lands?				
L. Historic Sites? (Sect. 106)				
M. Archaeological Sites? (Sect. 106)				
N. Man-made Resources of the Area?				
O. Energy Conservation?				
P. Ecological Relationships?				
Will the project breach any Published Federal, State, or local standards relating to solid waste or litter control?				

Part 1 Effect		Part 2 Significant	
A	B	C	D
Yes	No	Yes/May	No

3. Public Facilities and Services

Is the project one which affects:

A. Religious Institutions?
B. Health Facilities?
C. Educational Facilities?
D. Public Utilities?
E. Fire Protection?
F. Other Emergency Services?

4. Community Cohesion

Is the project one which affects:

A. Neighborhood Character and Stability?
B. Minority Groups?
C. Other Specific Interest Groups?
D. Local Tax Base?
E. Property Values?
F. Increase in Traffic Congestion?

5. Displacement

Is the proposal one which:

A. Requires the displacement of people?
B. Requires the displacement of businesses?
C. Requires the displacement of farms?
D. Requires relocation assistance?
E. Is highly controversial with respect to availability of adequate relocation housing?
F. Is located within an area that has inadequate replacement housing?
G. Results in employment changes?
H. Affects economic activity?

6. Pollution

Is the project one which:

A. Adversely affects air quality?
B. Is inconsistent with Federal, State or local air standards?
C. Adversely affects ambient noise levels for adjoining areas?
D. Is inconsistent with Federal, State, or local noise standards?
E. Adversely affects water quality?
F. Is inconsistent with Federal, State, or local water quality standards?

	Part 1 Effect		Part 2 Significant	
	A	B	C	D
	Yes	No	Yes/May	No
7. Aesthetics Is the highway proposal one which has a demonstrable negative aesthetic effect?				
8. Environment Will the project be inconsistent with Federal, State, or local law or regulation relating to the environment?				
9. Mandatory Significance				
A. Is there or is there not anticipated organized opposition to the proposal?				
B. Does the proposed action significantly affect historic or conservation lands (public or private) independent of whether they are Section 4(f) cases?				
C. Will the proposed action have impacts which have the potential to degrade the quality of environment, curtail the range of the environment?				
D. Will the proposed action have impacts which achieve short-term, to the disadvantaged of long-term, environmental goals?				
E. Will the proposed action have impacts which are individually limited, but cumulatively considerable? A project may impact on two or more separate resources where the impact on each resource is relatively small. If the effect of the total of those impacts on the environment is significant, an EIR must be prepared. The mandatory finding of significance does not apply to two or more separate projects where the impact of each is insignificant.				
F. Will the environmental effects of the proposed action cause substantial adverse effects on human beings, either directly or indirectly?				

APPENDIX C

ENVIRONMENTAL UNIT ORGANIZATION

Included in this appendix are summaries of interviews conducted with the transportation agencies of eleven states, one county, and the District of Columbia. The organizational designs of these agencies with respect to environmental assessment vary greatly.

On the organization charts displayed for each agency, the shaded blocks indicate those divisions, bureaus, or sections to which some responsibility for environmental assessments has been assigned.

CALIFORNIA

The California Department of Transportation serves a large state with many urban areas and with a large rural road system. Its organization is the traditional central office operation with strong districts having almost complete delegation of management functions. The department has strong central control of engineering and administrative standards, program management, rules, and regulations. The districts are responsible for all highway work within their territory from planning through maintenance and operation, including the systems planning of all forms of transportation. Allocation of funds and approval of programming are headquarters functions.

Environmental assessments are delegated to the districts; however, review and coordination with FHWA are the responsibility of the headquarters Office of Environmental Planning (Fig. C-1). With the exception of directly processing environmental documents through FHWA, the dis-

tricts are responsible for all administrative and technical handling of all environmental documents. Each district has an environmental unit (Fig. C-2) responsible for preparing the EIS, preparing or reviewing all other environmental documents, and assuring that all environmental requirements are fulfilled from system inception through maintenance and operation. Functional units are directly responsible for including environmental factors in their functions; for example, project development (interdisciplinary) teams are formed for each project. The project

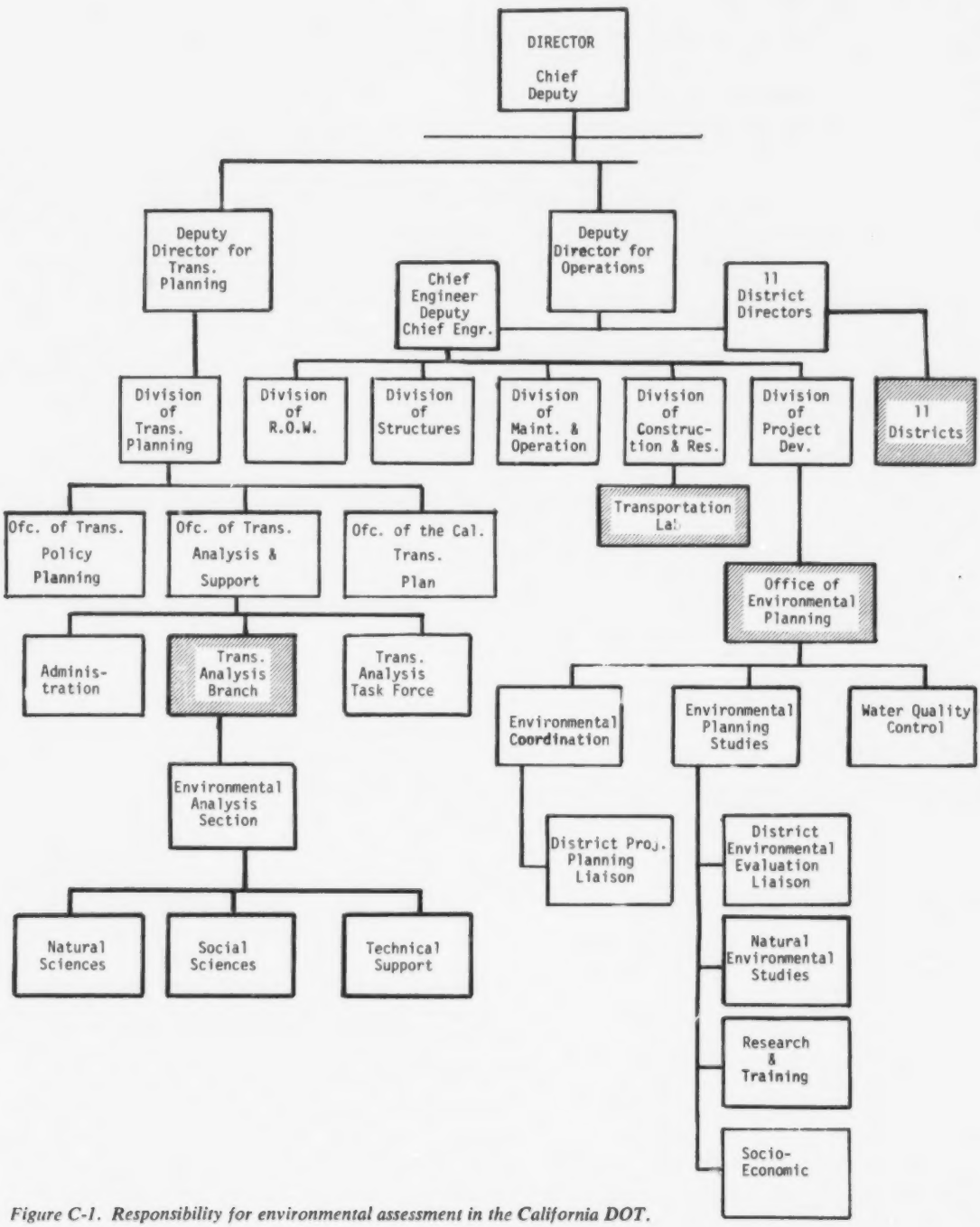

Figure C-1. Responsibility for environmental assessment in the California DOT.

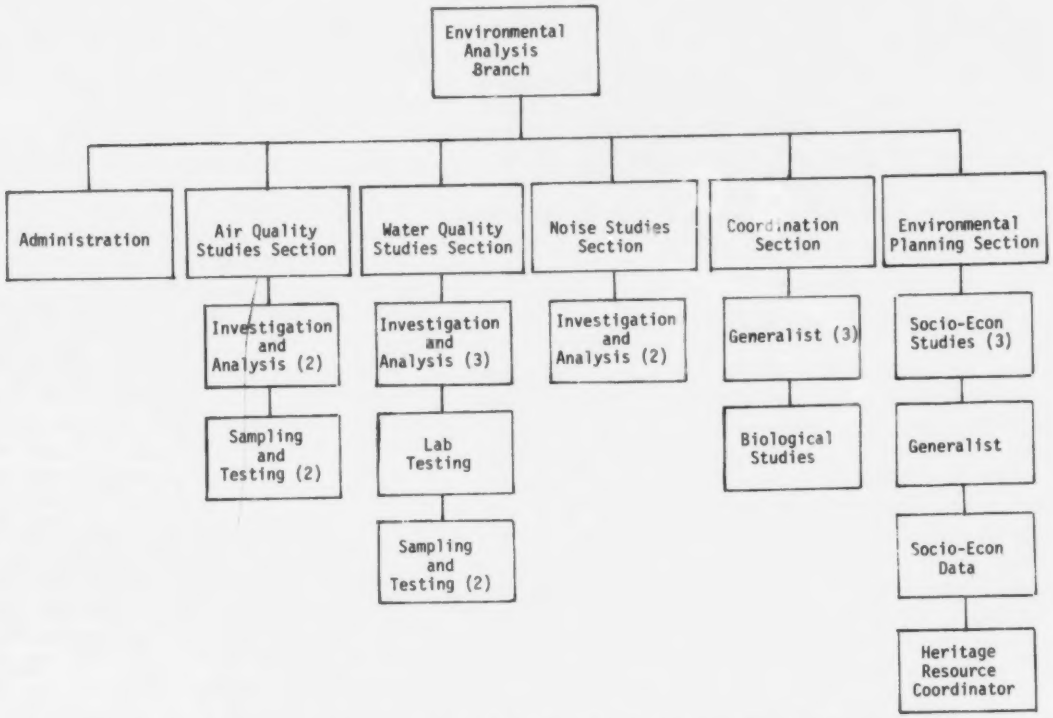

Figure C-2. California district Environmental Analysis Branch. (Note: The scientific sections are often located in the district laboratory.)

development team is not only responsible for incorporating all environmental requirements into the plans and specifications but also initiates all studies, including the environmental assessments.

Each district environmental unit contains at least environmental planners, writers, and experts in economics and social sciences with other technical expertise furnished either in the unit or by other district units (e.g., the materials laboratory). The headquarters Office of Environmental Planning provides coordination, planning, research, and training support. It does not provide expertise in any scientific area except biology. Scientific expertise, including water-quality-related biology and related environmental document review, is furnished by the Transportation Laboratory. Environmental goals, objectives, and policies are developed and coordinated by the Deputy Director, Environmental and Community Affairs, with input from each functional division.

In addition to its normal systems and project highway work, the California Department of Transportation must prepare and continuously update a Transportation Plan, which requires an environmental impact report. This report is coordinated and assembled in headquarters by the Environmental Section of the Division of Transportation Planning.

California's average construction budget has been about $400 million. They have expended approximately 555 man-years on environmental assessment effort. (California's budget and over-all effort have been reduced drastically in 1976.) California has reorganized in recent years; however, the amount of reorganization directly attributable to NEPA is difficult to assess because they also became a transportation agency during this period. At the state level, several new environmental agencies (such as a coastal commission and a series of water quality districts) were formed and a new state environmental law paralleling NEPA was adopted. In addition, many environmentally oriented organizations are active in California. For these reasons, California's environmental efforts include all systems planning and all projects.

The department traditionally has performed nearly all highway work using in-house staff. They have used a small amount of expert consulting services. This is also true in the environmental field. There has been only minimal use of private and academic consultants in archaeological, historical, public relations and research, and a smattering in all other environmental fields. Both federal and state agencies have been consulted for advice and training.

The environmental staff was, for the most part, developed by training or reassignment of existing personnel. Biologists, sociologists, and a few environmental planners were hired. Training has been primarily in-house, with assistance from private and academic consultants and other state and federal agencies. A few selected employees were subsidized for on-campus masters' degree work in environmental planning. In addition, the California State Univer-

sity system is available for training for a certificate course in environmental planning.

California has established a career class of Environmental Planner (Junior, Assistant, Associate, Senior, and Supervising Environmental Planner). This is the basic class used in their environmental unit; however, there are 27 disciplines and 35 classes to fill the 375 positions.

It is the general opinion of both staff and the executive level that California's management system is operating efficiently.

CONNECTICUT

Connecticut is a relatively small state with a largely suburban citizenry and a great deal of commuter and pass-through traffic. The planning, construction, maintenance, and operation of its highway system are the responsibility of the Department of Transportation. Traditionally, the department contracts the engineering of most of their large projects. On the average, the Connecticut construction budget is about $150 million.

The Transportation Environmental Engineer is responsible for the environmental activities of the department and is head of the Environmental Services Division of the Bureau of Planning and Research (Fig. C-3). The department is a central office operation with maintenance-only districts. In addition to the National Environmental Policy Act of 1969, Connecticut also has a state law paralleling NEPA. Therefore, by state law, other state agencies (such as the Department of Environmental Protection) are involved in environmental assessments.

The Environmental Services Division of the department accomplishes about 80 percent of the environmental effort needed. Consultants are hired for the complete EIS preparation and special assessment studies in air, noise, archaeology, and paleontology. Other state agencies make special assessment reports of historical, social, geological, and aquatic-biological impacts. The Environmental Services Division is presently developing capability in-house for complete air quality assessments.

The Environmental Services Division contains 20 people, including sociologists, biologists, conservationists, planners, engineers, geologists, and hydrologists in addition to clerical support. A career ladder entitled Transportation Environmental Analyst has been developed. This is paralleled by a transportation planner and engineer series. The majority of the staff were transferred or promoted from other department units into the Environmental Services Division. Two biologists, one sociologist, one conservationist, and one environmental analyst were newly hired. Existing staff received training in air and noise analysis through FHWA and private consultants.

The Connecticut Department of Transportation has maintained excellent cooperation by letters of agreement with other state agencies. The Connecticut Historical Commission performs historical reviews. The state archaeologist performs the archaeological and paleontological reviews, the Commission on Human Rights and Opportunities prepares and reviews social and minority impacts, the Department of Environmental Protection and the state Planning Council along with other state agencies perform both state and A-95 reviews.

Connecticut considers their management scheme to be effective.

DISTRICT OF COLUMBIA

The District of Columbia (D.C.) is a single urban area containing the seat of the federal government; however, its department of transportation does have status as a state highway agency. Its road network consists primarily of city streets, but it has no jurisdiction over the federally owned roads and streets within its boundaries.

The D.C. Department of Highways and Traffic was reorganized on July 25, 1975, into the D.C. Department of Transportation. At that time an Office of Safety and Environment was created; however, because of staffing restrictions it has not yet been fully organized or staffed. One person, the Environmental Coordinator, is responsible for assuring that all environmental assessments and documentation have been consummated. Special assessment studies and reports are made either by the various in-house functions, by other city or federal agencies, or by a consultant. Most environmental impact assessments are prepared by the Environmental Coordinator, who has a communications background. An interdisciplinary approach is achieved by involving various working divisions and outside consultants as well as other agencies.

The District has taken advantage of courses and seminars offered by NHI both for their Environmental Coordinator and other staff members. Although they are understaffed at present, the District will probably hire few additional people for environmental work. Their understaffing is because of budget constraints and the feeling that technical research functions are best left to other agencies.

Because this agency is undergoing reorganization, it is difficult to measure its effectiveness in the area of environmental assessment. The Environmental Coordinator is new and highly effective in attempting to meet existing needs. The present staffing is apparently insufficient, but the future depends on the new organization as well as new responsibility and authority.

FLORIDA

Florida is a large recreational and industrial state with an urbanized population but also with many miles of rural roads. The Florida Department of Transportation is responsible for the planning, construction, maintenance, and operation of the state highway system.

The average highway construction budget of Florida is about $240 million. The organizational structure is the traditional central office–district relationship (Fig. C-4). The districts (five territorial districts and one turnpike district) are responsible for all highway work within their territory. The Environmental Administrator in the central office is responsible for coordinating the environmental program of the department (Fig. C-5). The central office develops policies, procedures, and techniques concerning environmentally related activities. They also review and evaluate transportation projects to ensure appropriate con-

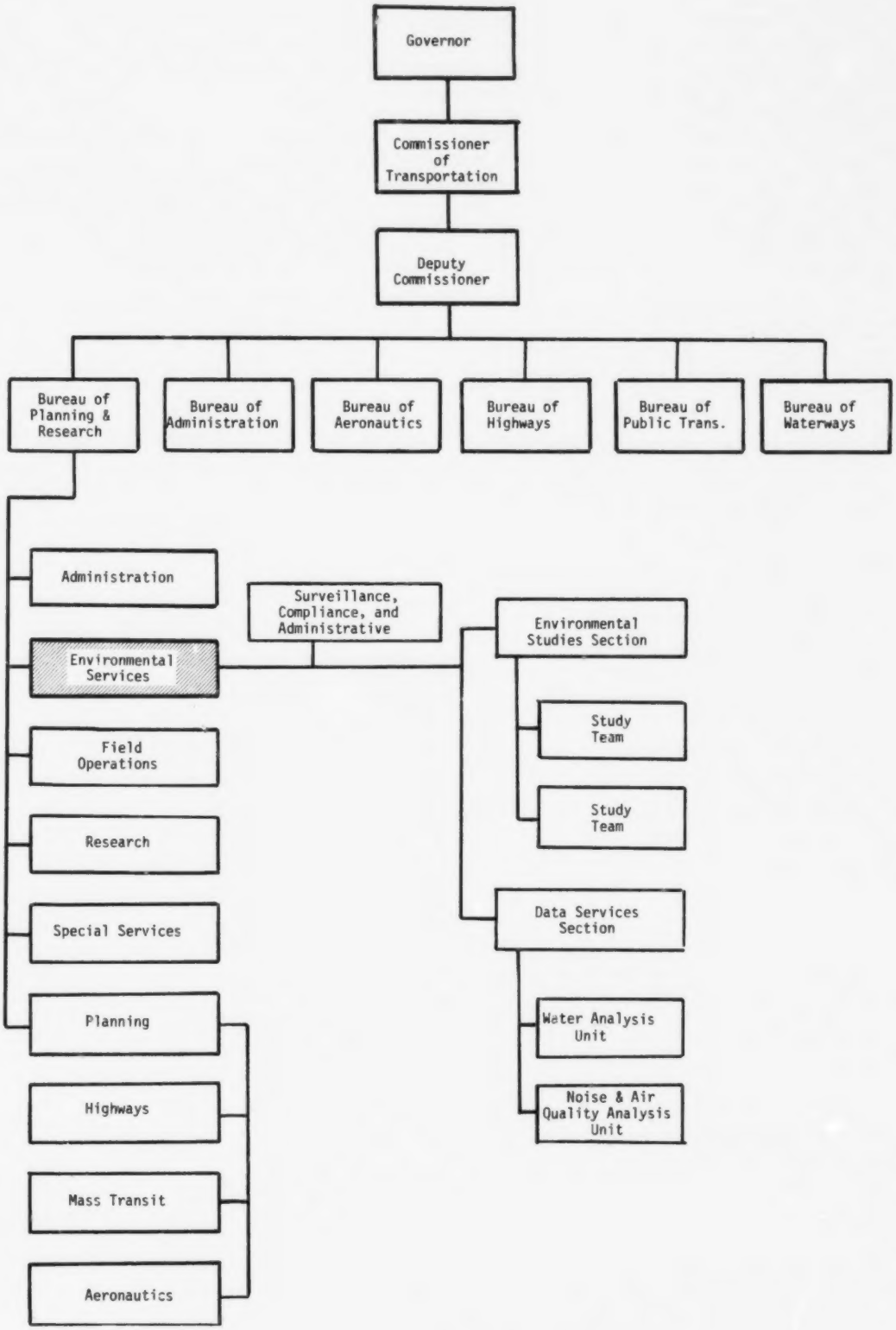

Figure C-3. Responsibility for environmental assessment in the Connecticut DOT.

sideration of the environment and furnish expert advice to the districts. In addition, they provide all of their research. The interdisciplinary approach is maintained by clearing proposed activities through the environmental planning and road operations sections.

The districts' responsibilities include performance of environmental assessments and preparation of the EIS (Fig. C-6). However, much of the special assessment work is either done by central office specialists or by consultants.

It is the philosophy of the department to deal with environmental concerns as early as possible. Thus, most of the problems are solved or at least recognized during the systems development phase. This is a central office function and is handled by the Planning Bureau but with input from the districts, the Environmental Administrator and other state agencies (Fig. C-7). Regardless of the funding anticipated for a proposed project, the same environmental analysis is made for all projects. As a result, Florida's total transportation system at all levels is in accord with the transportation and environmental objectives of NEPA. In this way, Florida is always in a position to make maximum use of available funds.

Since the implementation of the Action Plan, the department has provided 42 new positions in the environmental field; 32 of these are in their new class of Environmental Specialist. This is a career class extending from grade I through grade IV with a bachelor's degree in an environmentally related discipline and one year's experience required at the entrance grade. Advanced degrees are accepted in lieu of experience.

The Florida Department of Transportation has con-

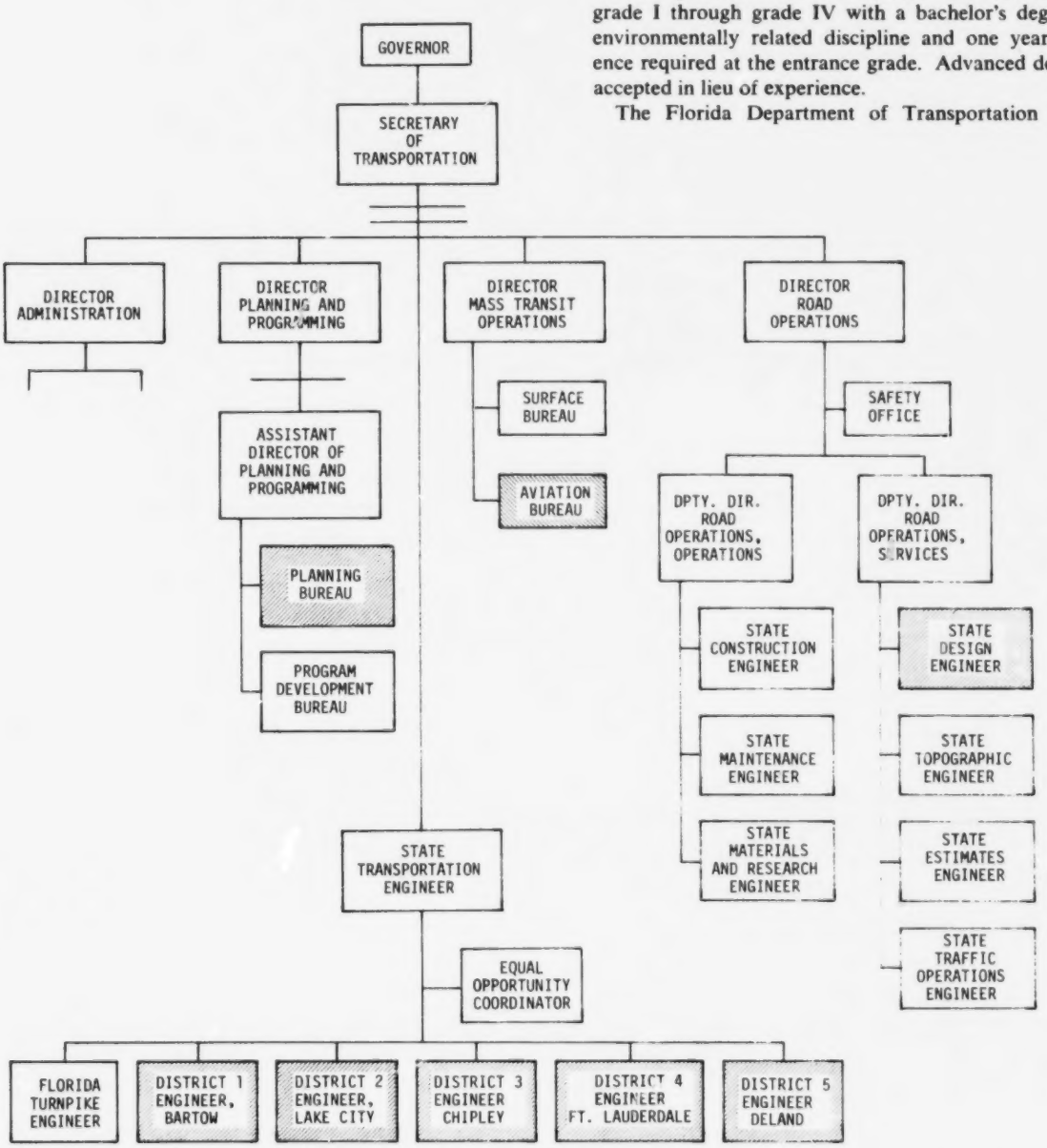

Figure C-4. Responsibility for environmental assessment in the Florida DOT.

tracted with the Battelle Memorial Institute to provide an environmental awareness program, which is designed to train 3,700 employees in nine areas: (a) environmental management, (b) ecology, (c) public involvement, (d) water quality, (e) air quality, (f) noise technology, (g) sociology, (h) aesthetics, and (i) waste management. To ensure continuing development, 25 department employees are being trained as instructors.

In addition to the Battelle in-house training, the department sponsors NHI courses and uses them in their training program.

The Florida Department of Transportation considers their system to be effective. They are having some difficulty maintaining public awareness and interest in transportation projects. In addition, involvement of other agencies has been difficult to maintain.

ILLINOIS

Even though Illinois is generally conceded to be a largely industrialized and urbanized state, it should be emphasized that farming activity also has a major influence on the state's character. Outside the urban areas, there are many miles of rural highways and a great deal of agricultural land. Planning, construction, maintenance, and operation of highways are the responsibility of the Illinois Department of Transportation. The department's annual highway construction budget has averaged around $500 million over the past three years. The general organization of the department is the traditional central office located in the state capitol and district offices located throughout the state. The central office is responsible for the development of transportation plans and programs; district offices are responsible for the actual implementation of these plans and programs.

The Bureau of Environmental Science has primary responsibility for all environmental activities of the department (Fig. C-8). The bureau provides environmental expertise, monitors environmental activities, develops environmental policies and procedures for environmental impact statements and negative declarations, reviews all EIS and ND, conducts departmental training programs in environ-

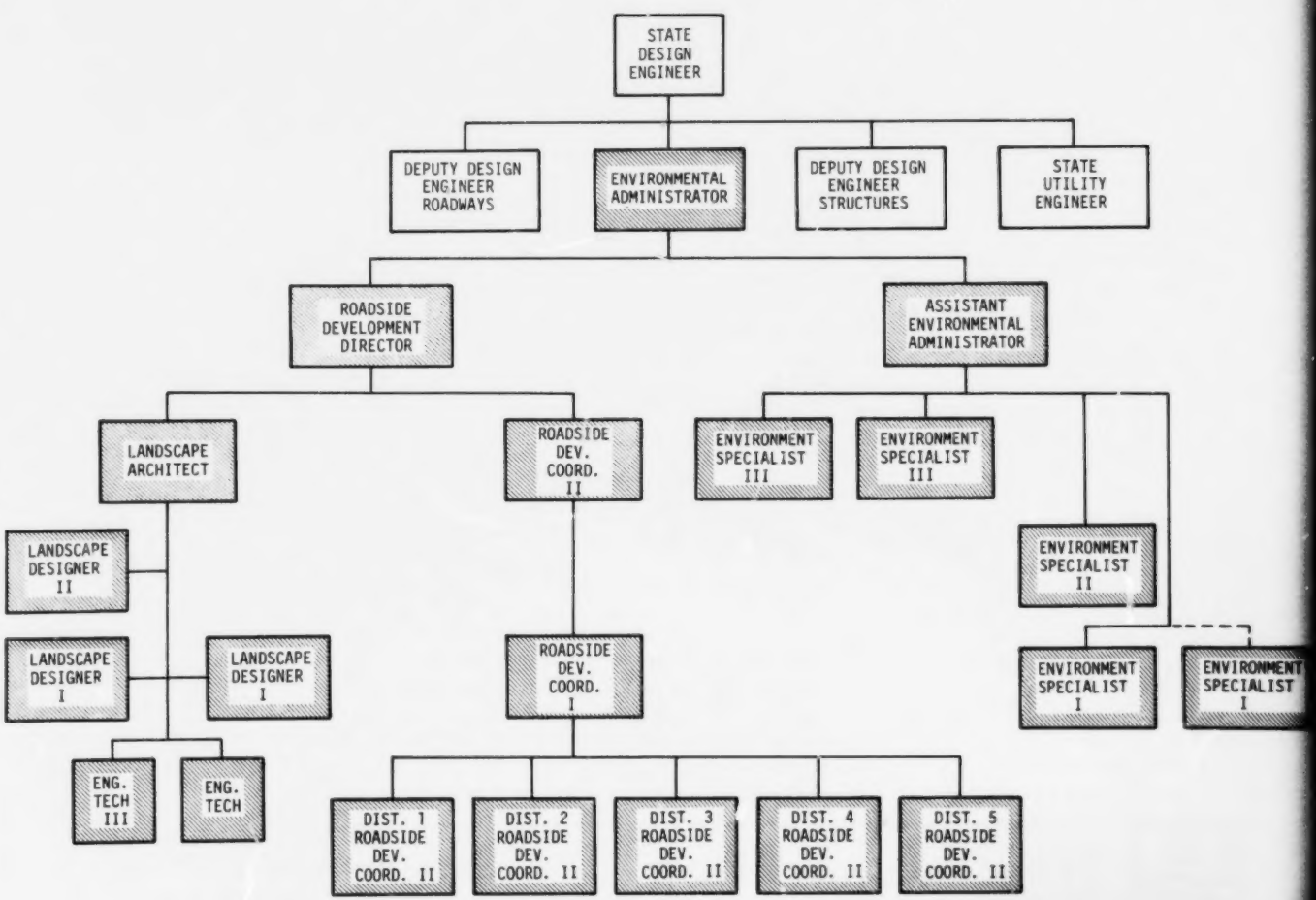

Figure C-5. Environmental responsibilities within the office of the State Design Engineer, Florida DOT.

mental subjects, and coordinates the processing of EIS and ND with federal, state, and local agencies.

It is each district's responsibility to prepare environmental reports and statements for highway projects within its district. Special expertise that is not available at the district offices is provided by the central office, other state agencies, and consultants.

An Environmental Advisory Board has been developed consisting of members from practically all state and federal agencies that are actively concerned with the impact of transportation programs on the environment. Chairman of this board is the Chief of the Bureau of Environmental Science. The board's responsibility is to review the planning program of each district and to provide early interagency and intra-agency coordination on transportation projects.

The Bureau of Environmental Science has a staff of 17. Positions are filled on the basis of the disciplines needed. Almost all bureau staff members are relatively new to their positions and are, for the most part, experts in their respective disciplines. Some of the disciplines represented by the bureau are economics, sociology, environmental science, meteorology, biology, aquatic biology, systems analysis, engineering, ecology, acoustics, urban geography, and anthropology.

The bureau has provided in-house training to other department personnel in noise measurement and air quality analysis and in the natural and social sciences. In addition, the bureau has sponsored two National Highway Institute courses: the Water Quality Workshop and Ecological Impacts of Highway Projects.

The Illinois Department of Transportation has had stringent controls on the hiring of additional personnel since the inception of the bureau. Consequently, the bureau has not been able to completely staff central office sections. In addition, the bureau's plan called for an environmental science unit in each district. This has not been achieved. For these reasons, the staff does not believe they have attained their anticipated efficiency. However, they do believe the system is effective over-all and has already

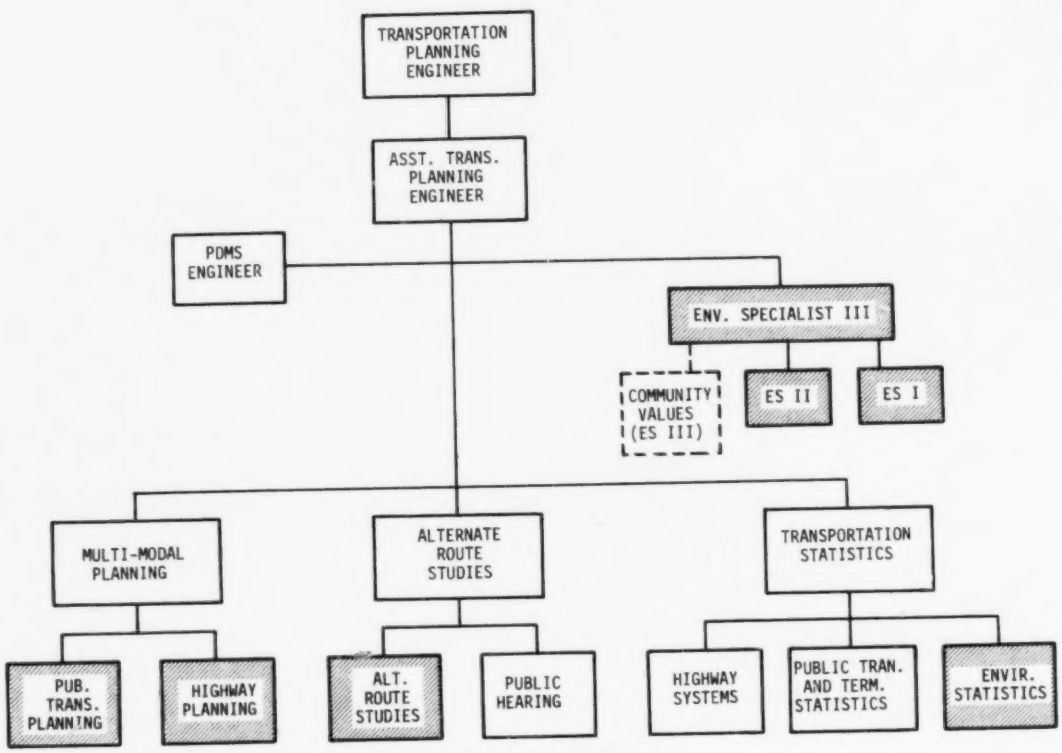

Figure C-6. Transportation Planning Section in a Florida district office.

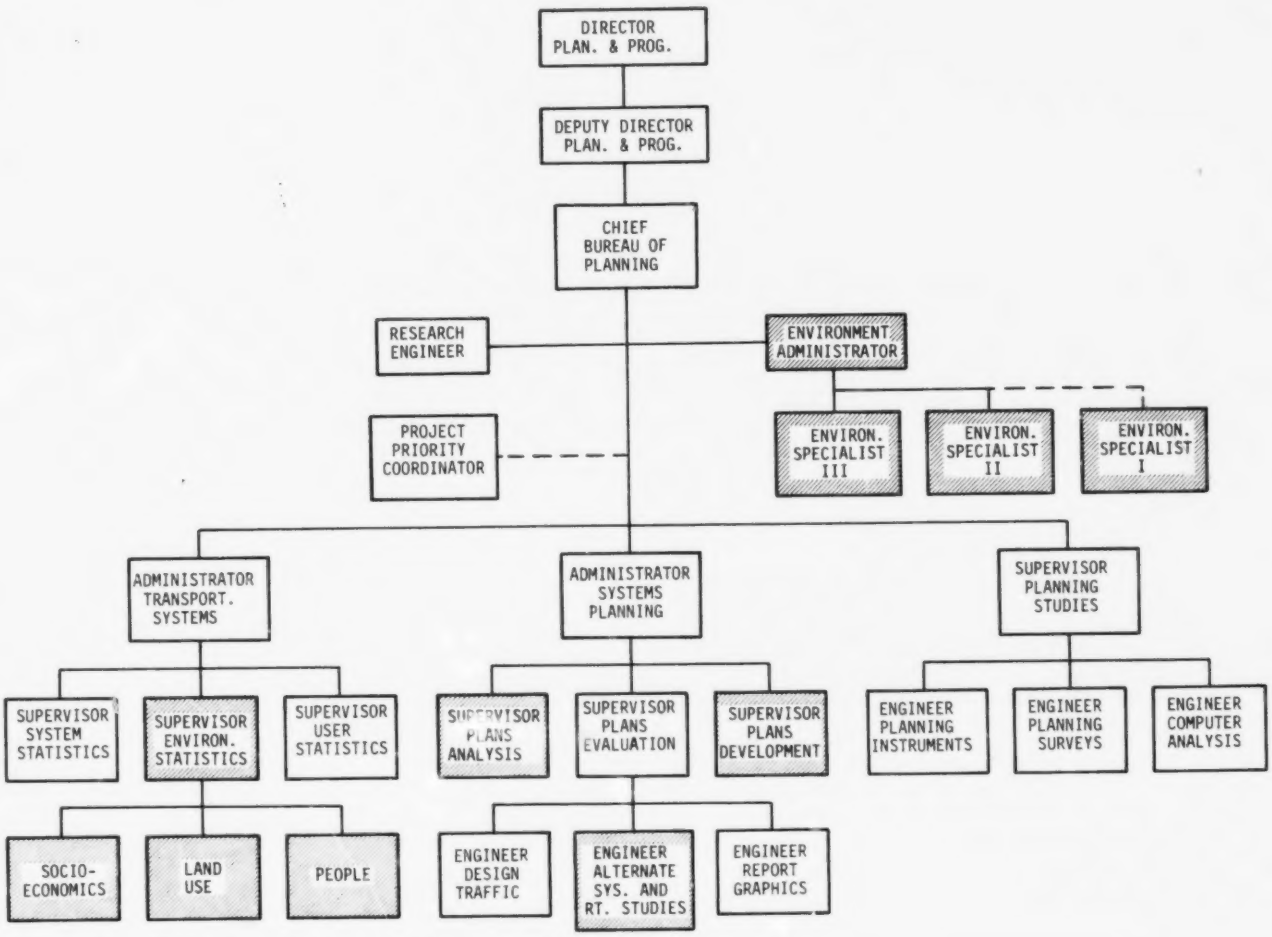

Figure C-7. Organization of the Planning Bureau of the Florida DOT.

achieved a high degree of interagency and intra-agency involvement. They have not yet achieved the citizen involvement they desire.

MICHIGAN

Michigan is a combination rural and heavily urbanized state with a great deal of industrial concentration around the Great Lakes. The Michigan Department of State Highways and Transportation is an example of an organization that combines all disciplines into a cohesive and effective environmental unit. Its central office unit, the Environmental and Community Factors Division, answers through the Assistant Deputy Director to the Deputy Director in charge of the Bureau of Transportation Planning (Fig. C-9). The division performs or is responsible for all transportation-related environmental assessment, including the EIS. This is in spite of the fact that Michigan has both planning regions and districts (the boundaries of which do not coincide). The districts are responsible only for maintenance; the purpose of the planning regions is primarily to ensure positive involvement of the public and local governments in the statewide planning process. Michigan's average highway construction budget is about $250 million.

The environmental division does all the work in the environmental area, such as planning and coordination with all other agencies, writing guidelines and procedures, furnishing field staff for and performing all studies, assisting at public meetings and hearings, preparing all technical assessments except historical and archaeological studies, preparing and reviewing EIS, and resolving all EIS comments. They are responsible for environmental assessments at all stages from systems planning through construction but have no duties during operation and maintenance. They also are not involved in federal-aid pass-through work to local agencies. This is the responsibility of the local government division.

The environmental division expends about 75 man-years in-house each year in this effort with a staff of three biologists, one landscape architect, one botanist, four engineers, one geologist, four resource developers, three urban planners, one business administrator, two economists, one sociologist, one social psychologist, two social generalists, and clerical and technical personnel as needed. All personnel, except for two supervisors, were hired specifically

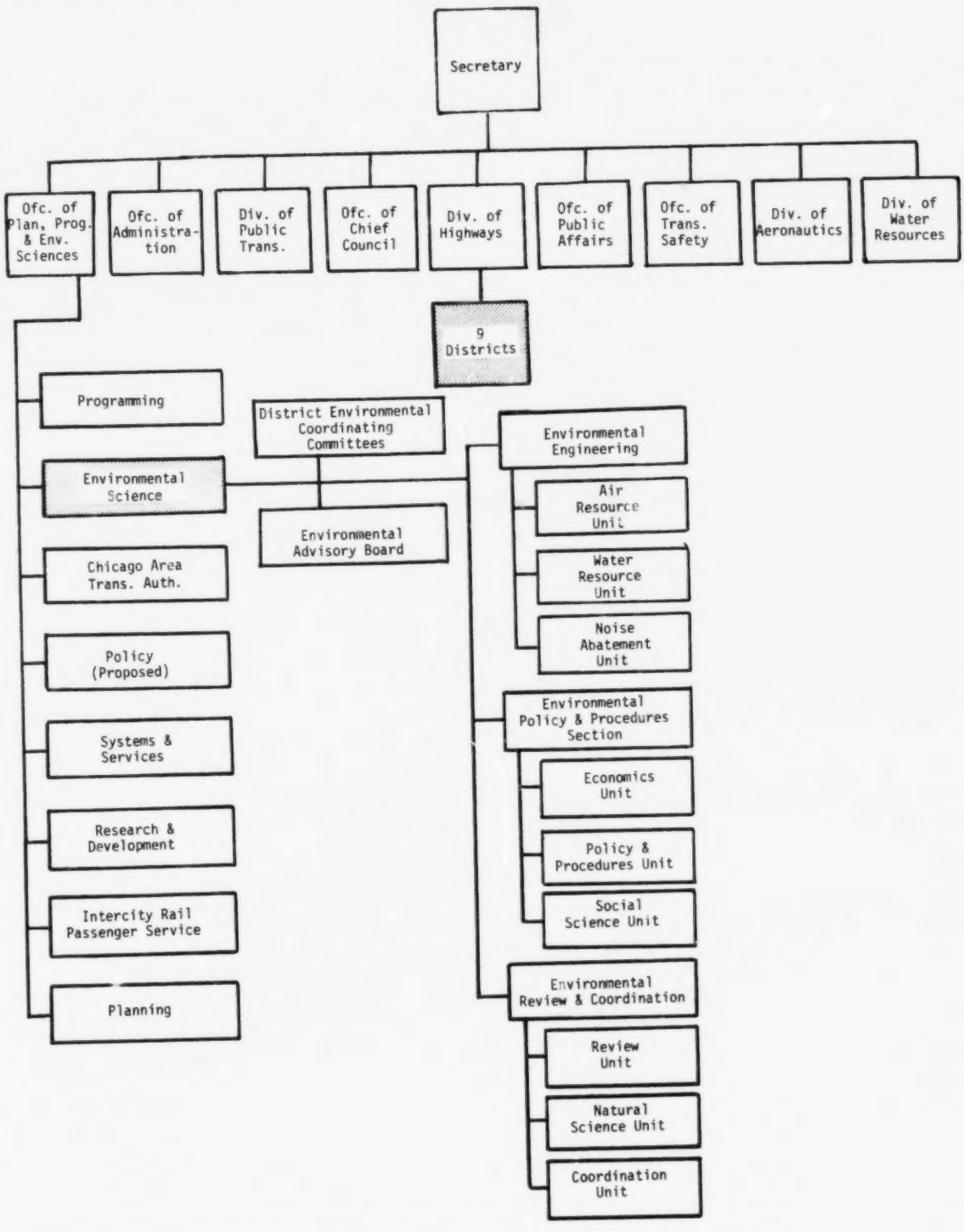

Figure C-8. Responsibility for environmental assessment in the Illinois DOT.

for the environmental unit. About 35 man-years are involved in the preparation of the EIS and about 40 man-years in the collection and analysis of data.

The only technical studies not performed by this unit are the archaeological and historical studies. The unit also obtains some assistance in ecology and air quality assessments from other state agencies. Academic or private consultants are only used for a small amount of research. There are no staff members specified as writers; the writing of an EIS for a specific project is assigned to any one of the staff without regard to specialization. It is the staff member's duty to coordinate the complete process for that specific project.

The governor of Michigan has established the Michigan Environmental Review Board. This board must review and approve the environmental integrity of all state projects. Members of the board are from all state agencies; however an agency can elect not to participate on a specific project. Such a decision would be made when the agency finds that the project contains no factors in which it is involved. Internally, the department establishes interdisciplinary teams called location teams for each project.

The staff and executive level believe this organization is effective. The only change they contemplate from their original Action Plan is to combine corridor and line studies into one report; originally they were separate.

MINNESOTA

The Minnesota Department of Highways is an example of an organization with strong districts responsible for all phases of highway work from implementation planning through maintenance and operation. Systems planning and

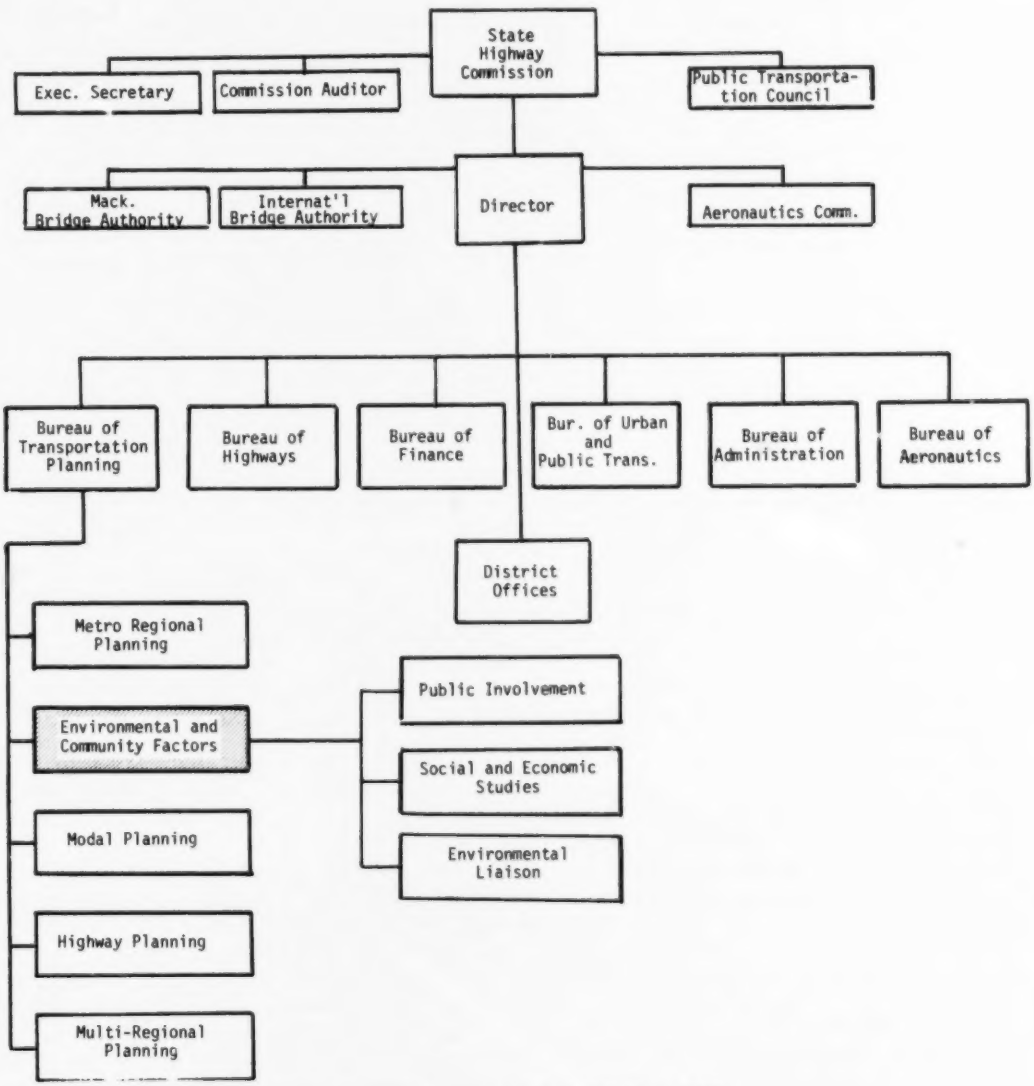

Figure C-9. Responsibility for environmental assessment in the Michigan DOT.

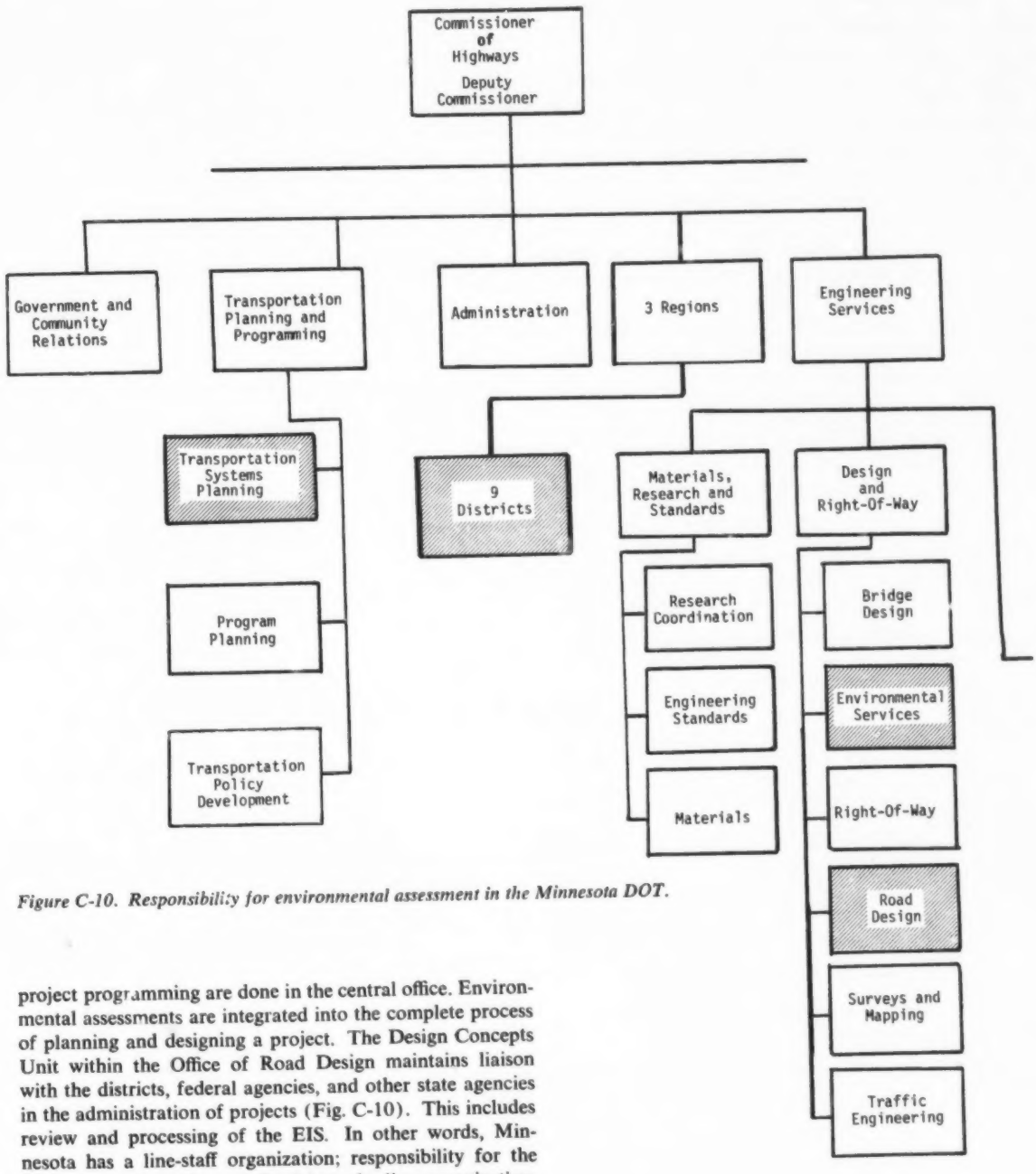

Figure C-10. Responsibility for environmental assessment in the Minnesota DOT.

project programming are done in the central office. Environmental assessments are integrated into the complete process of planning and designing a project. The Design Concepts Unit within the Office of Road Design maintains liaison with the districts, federal agencies, and other state agencies in the administration of projects (Fig. C-10). This includes review and processing of the EIS. In other words, Minnesota has a line-staff organization; responsibility for the environmental studies are fitted into the line organization, with some help and coordination from central office staff. The State's average construction budget is about $90 million. They expend about 35 man-years in environmental assessment. Minnesota's organization is somewhat different from the traditional central office–district structure in that the state has three regional offices interposed between the districts and headquarters. There are nine districts.

Although Minnesota has reorganized in recent years as a result of environmental involvement, the effort is more to integrate the process into regular activities than to set it aside as a separate activity. For instance, at the district level the project manager is responsible for the EIS and also all other studies, reports, and statements involved with a project (Fig. C-11). The project manager obtains technical information and analysis from various in-house sources and consultants as needed. Consultants are hired by headquarters but may be selected by the district. In headquarters, the coordination and administration involved in environmental assessments are the responsibility of a Design Concepts Unit within the Office of Road Design whereas technical advice and review are performed by the

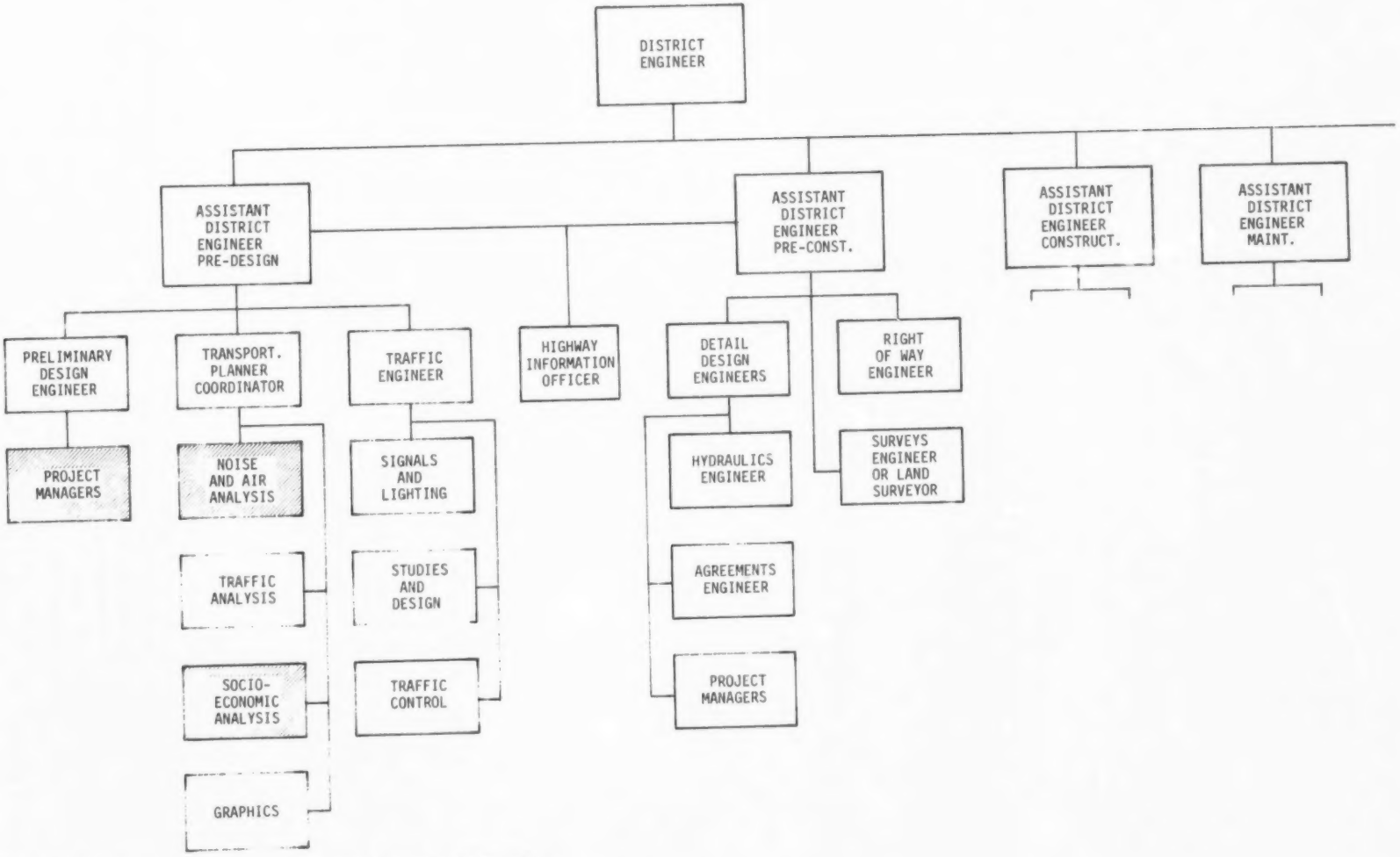

Figure C-11. Environmental assessment in a Minnesota district office.

Environmental Services Section. Minnesota uses multidisciplinary input to achieve the interdisciplinary team approach. A sociologist is available within the department to work directly with the districts on social impact assessments and public involvement.

The Action Plan in general has been implemented except for the creation of an Action Plan Office, the function of which will be to monitor compliance with the intent of the Action Plan and to develop guidelines and procedures. This will soon be implemented.

The department performs practically all technical assessments except for air quality studies (development of in-house capability now under way), archaeological surveys, and some historical factors. These are performed by other state agencies. The state pollution control agency assists with air quality studies, the historical society with archaeology and history, and the natural resources agency with ecological studies. The department uses academic consultants in the socio-economic field and private consultants for expertise in various fields as needed. They have used consultants for the complete EIS but have not found this practice to be economical in that review and rework require as much staff work as if the job had been performed in-house. Through training and retraining, the department has used existing staff personnel in the environmental effort almost entirely. They have hired a sociologist, an economist, a planner, and a biologist.

Training has been furnished by FHWA, universities, consultants, and in-house programs. They have found the University of Wisconsin workshops on environmental subjects to be of special value. The department has not found it feasible to create a career ladder in the environmental field because of the administrative complexities of their civil service system; however, they are working in this direction. Recognition as a professional engineer is less frequently a requirement for administrative positions. Because they are a decentralized organization, implementation is dispersed to the responsible units.

It is the opinion of the executive level that their system of management of environmental assessment is effective. The department plans to complete implementation of their Action Plan by adding an Action Plan monitoring group in the central office.

Reorganization of the Minnesota Department of Highways into a department of transportation during 1976 may cause considerable changes in methods of performing environmental assessments.

NEBRASKA

Nebraska is essentially a rural state with one large urban area, Omaha. Its highway planning, design, construction, maintenance, and operation are the responsibility of the Department of Roads. In recent years the state's construction budget has averaged $100 million. They have ten people assigned exclusively to environmental work and expend about 15 man-years in this area. Nebraska has seven districts, which are assigned construction and maintenance activities. All planning and design activities, including environmental activities, are performed in the central office. The Nebraska staff accomplishes most of the work with only the peak design workloads being let to private consultants. Environmental assessments are performed by staff with assistance from other state agencies in the social, economic, archaeological, and historical fields. In addition, Nebraska hires consultants for special studies in the social and economic areas; however, the staff does all of the final analysis and report writing. Occasionally in a highly controversial area such as Omaha, the state hires a consultant to prepare the EIS; however, so much rework is necessary that it is a very expensive procedure. Not counting all the review and rework, Nebraska finds that they can produce an EIS at about one-half the cost of a consultant. The multitude of federal rules and regulations and the changes occurring almost daily are a problem for general consultants in the environmental field. Consultants with expertise in special fields have been very successful.

Nebraska has an Environmental Advisory Group (interdisciplinary team) that meets once each month to review all projects under way in planning and design. In addition, all other state agencies review the draft EIS, as does the state-level clearinghouse where it must be filed. Although Nebraska does not have a state environmental act, they do have a Department of Environmental Control, which controls indirect-source pollution. They also have an act requiring approval for crossing all drainage areas.

All environmental assessment work of the department is the responsibility of the Environmental Section of the Project Development Division (Fig. C-12). They prepare the EIS and direct it through all levels of approval. They also prepare most of the technical backup reports, including air, noise, and water reports, and appear as necessary at public hearings and other hearings. In the social and economic fields, the Environmental Section obtains technical reports both from consultants and from other state agencies. In the archaeological and historical fields, they rely on the state department of history. The Environmental Advisory Group includes an agronomist, a landscape architect, a geologist, an engineer, an attorney, a hydrologist, and an economist. Interdepartmental review of EIS includes various divisions and sections having expertise in particular SEE aspects and engineering and involves about 15 people outside the Environmental Section. The section is responsible for the implementation of all environmentally related factors. Implementation is achieved primarily by careful preparation of the EIS and by making sure that all points are covered by the plans and specifications; there is little field review either during construction or actual operation and maintenance. This is because of the small staff; the state hopes to correct this in the future. In order to staff for NEPA and FHWA requirements, it has been necessary for Nebraska to hire only two additional people, a sociologist and an ecologist. The balance of the staff was trained primarily by FHWA-sponsored classes. Training in the section's administrative processes and procedures is covered by the Environmental Section itself.

Nebraska was one of the first states to submit and obtain approval of its Action Plan, which covered the state only and not the cities and counties. The plan has now been revised to include these and to be in compliance with all

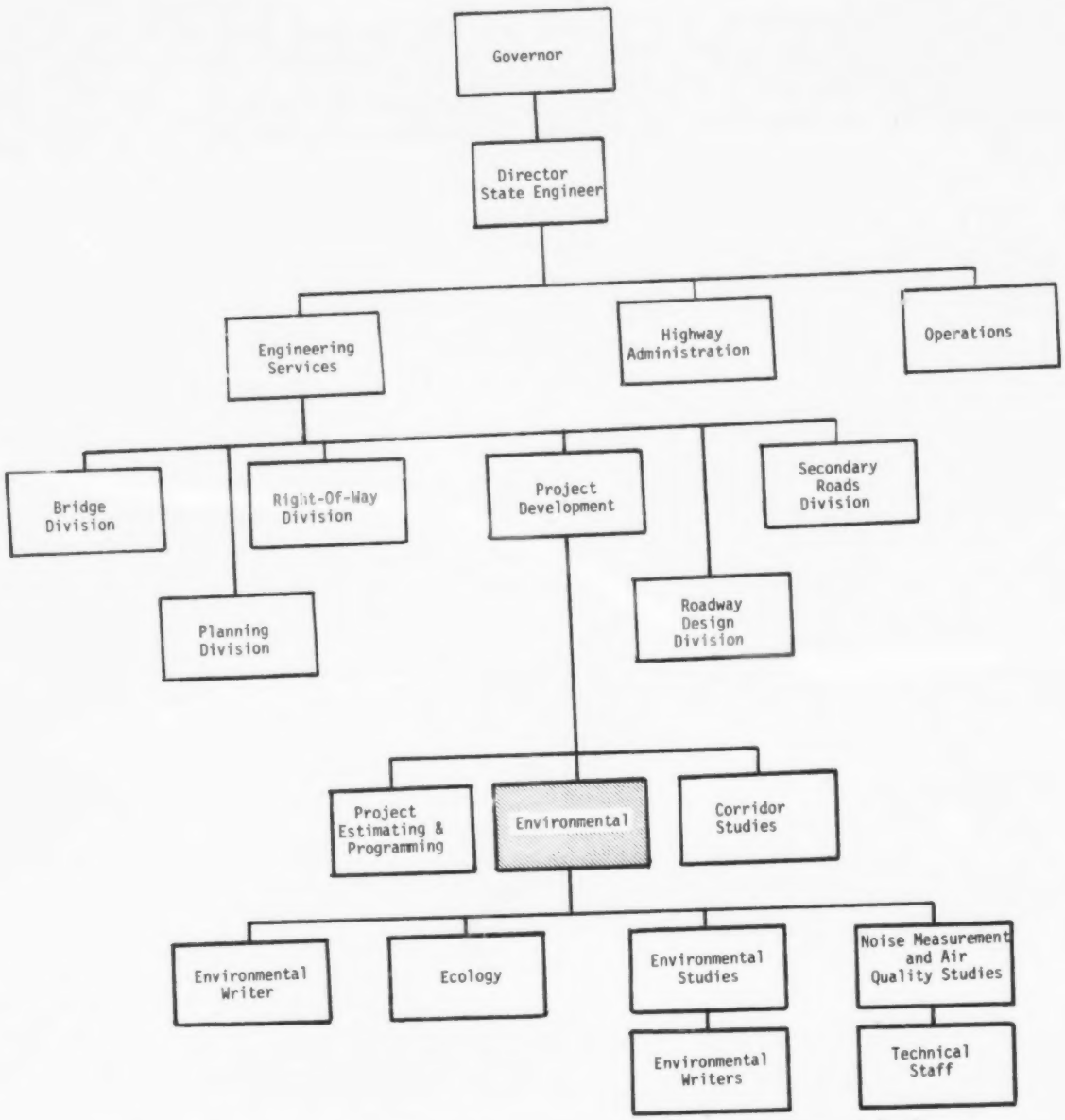

Figure C-12. Responsibility for environmental assessment in the Nebraska Department of Roads.

current FHWA rules and regulations. One city, Lincoln, Nebraska, has not been included because it has an approved plan of its own (the only city to have one).

The environmental staff in Nebraska believe that their system is highly efficient and would not change it except to add staff to increase coordination and implementation. They feel that a career ladder in their particular speciality would assist in the long range.

PENNSYLVANIA

Pennsylvania is a large, heavily populated industrial state. The engineering management of its highway system is the responsibility of the Department of Transportation. The basic organization of the department is the traditional central-office–strong-district concept. Long-range or systems planning is a central office function. The districts are responsible for project planning, construction, maintenance, and operation within their territory. The Pennsylvania highway construction budget averages about $300 million. Traditionally, Pennsylvania does much of its planning and design using staff but contracts out certain large planning and design projects.

The assessment of the environment in Pennsylvania involves expertise from both in and outside of the depart-

ment. The Office of Environmental Quality under the Deputy Secretary for Highway Administration and environmentalists in the Office of Planning are key elements in the effort (Fig. C-13). The role of the environmental staff is to set policies, standards, and guidelines; to provide training and coordination; and to ensure the environmental effort. The department's interdisciplinary team, chaired by the Office of Environmental Quality, reviews and approves the EIS both in draft and final form. This interdisciplinary team is composed of multi-discipline staff members from

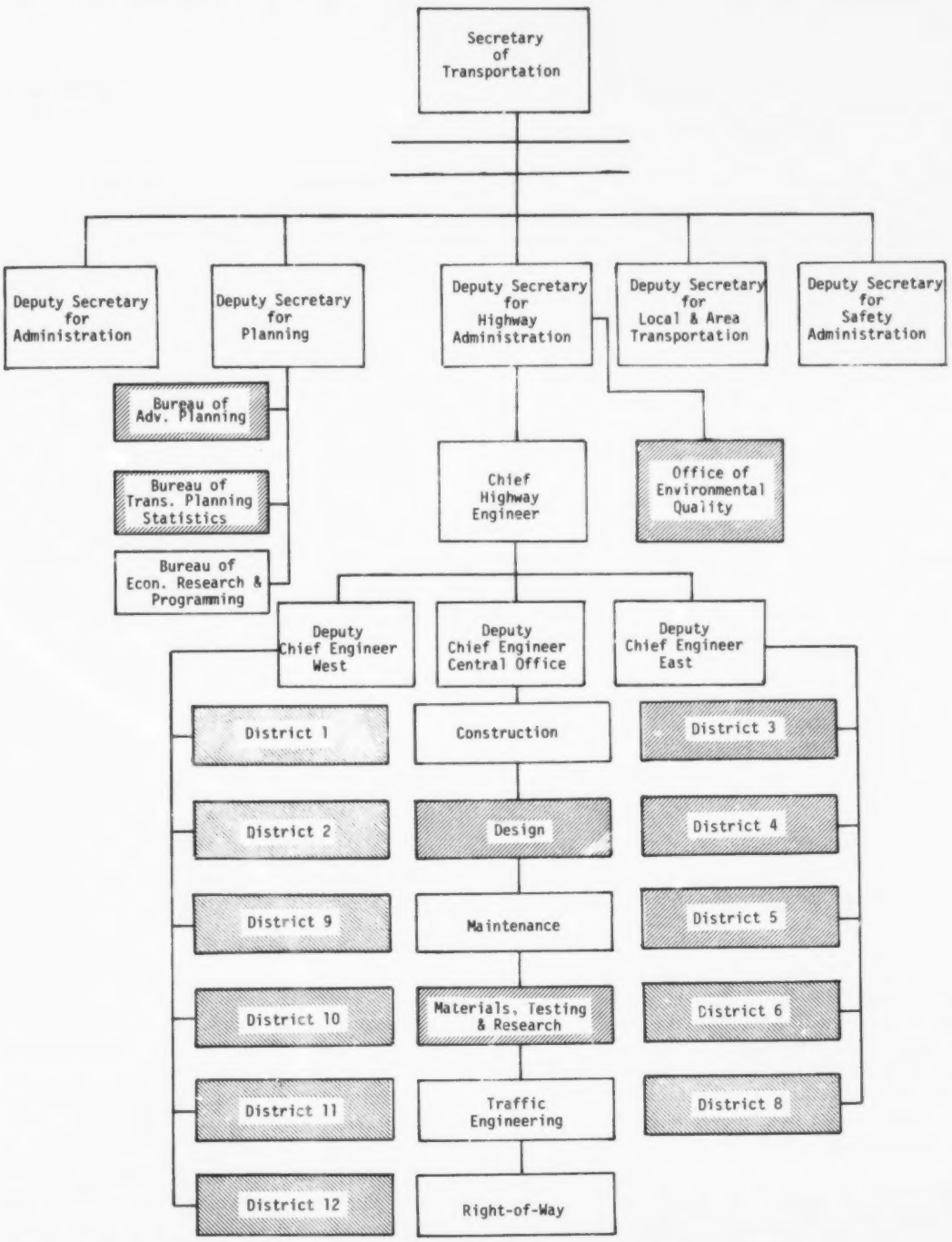

Figure C-13. Responsibility for environmental assessment in the Pennsylvania DOT.

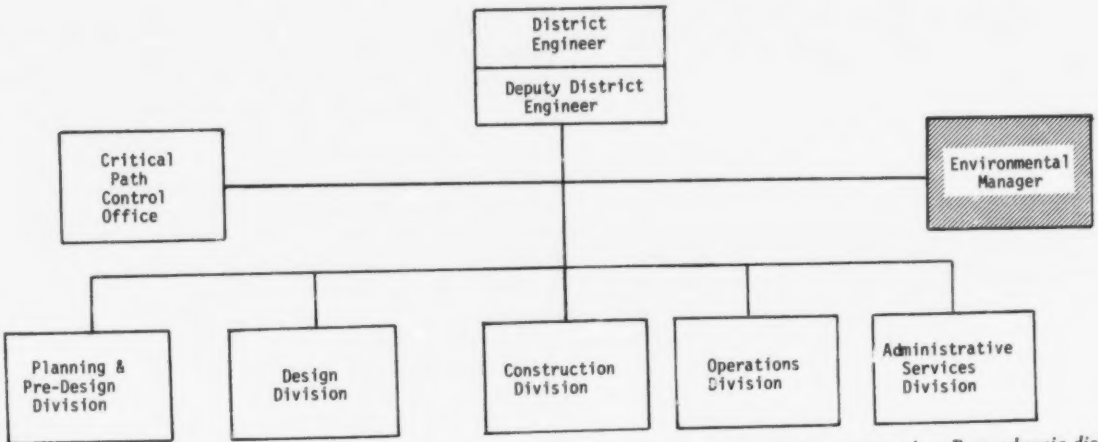

Figure C-14. Environmental assessment in a Pennsylvania district office.

the Office of Environmental Quality; Office of Chief Counsel; and the Bureaus of Advance Planning, Mass Transit Systems, Design, and Right-of-Way.

Pennsylvania's Department of Environmental Resources is the resource for all other state agencies in obtaining scientific environmental assessments. Pennsylvania calls upon it to provide assistance as needed but in addition has expertise on board in the central office to help the districts. At present the Office of Environmental Quality consists of four people in addition to the Director, with an anticipated expanded staff of nine. The activities currently covered are environmental policy and procedures, environmental review and coordination, air quality analysis, water quality and ecological analysis, and citizen participation. Areas still requiring additional staff are noise quality, economic analysis, social analysis and, possibly, historical and archaeological analysis. The historical position will be filled only if the Pennsylvania Historical and Museum Commission is unable to perform historical and archaeological analyses for the department. All positions to date have been filled with new employees; these include a biologist, an environmental resource manager, a social scientist, and an air quality control engineer.

In addition to the Office of Environmental Quality, the department has created and has functioning in each district an environmental analysis team, whose duties are to ensure that all SEE effects are properly reviewed and brought to the attention of the District Engineer to aid him in decisions on a project (see Fig. C-14). It also reviews the environmental impact statements for projects to assure that all SEE effects have been properly considered.

In the central office Bureau of Design, an analysis team composed of a highway review engineer, a civil engineer with training in sanitary and water quality fields, and a landscape architect provides expertise in the review of project studies and EIS in the areas of air pollution, noise pollution, water pollution, aesthetics, and engineering considerations.

UTAH

The Utah Department of Transportation is primarily a rural agency with a relatively small urban area and few large urban problems. Its construction budget averages about $60 million.

The state devotes an equivalent of 10 man-years per year exclusively to environmental assessment. Actually, there are indications that many more man-years are used in the environmental assessment area; however, they are accounted for in the normal functions of route analysis, design, construction, etc. Utah has a headquarters staff and district offices. There are six districts, with one classified as urban.

Traditionally, Utah has performed all work with in-house

staff except during peak workloads. In addition, they tend to let work of a highly controversial nature to private practice, assuring themselves of credibility and assuring the public of an unbiased approach. Insofar as work necessary to assess the environmental effects is concerned, it is performed essentially in-house except for the archaeological and historical factors and social and broad economic aspects. The latter two are covered by outside consultants primarily hired from the universities. Archaeology and history are handled by the historical society. Occasionally, for credibility in a highly controversial area, a private consultant is hired to produce the complete EIS. Unfortunately, this has not been entirely satisfactory in that it has required much state time to review and make corrections to the EIS to assure conformance to FHWA requirements.

Philosophically, the Utah Department of Transportation considers the requirements of NEPA and the 1970 Federal-Aid Highway Act as necessary steps in attaining their goal of providing fast, safe, and efficient transportation to the citizens of Utah. There is no question that this philosophy has been made compatible with the additional admonition that a proper balance with the environment be created. This is assured statewide by the Utah Transportation Environmental Council, which has been appointed by the governor to review all state-financed transportation work with or without federal participation.

Environmental assessments are performed at two levels in the Utah organization. The first is by the Office of Policy and Systems Planning (Fig. C-15). At this level, a route analysis report is prepared to determine with a minimum of effort whether or not a project should be built. This organizational unit has both sociologists and economists on its staff. The assessment is primarily socioeconomic with superficial considerations of other factors. If the decision is made to build the project, further environmental assessment becomes the responsibility of the Preconstruction Division.

Under the Preconstruction Division, the Location and Environmental Studies Section is responsible for executing and obtaining approval of an EIS for each project (Fig. C-15). The EIS is prepared in the district or in the Central Roadway Design Section by the project design engineer with technical help from the headquarters environmental unit. This includes assistance in the areas of ecology; biology; air, water, and noise quality; and environmental hazards. The headquarters environmental unit arranges for the historical and archaeological reporting and furnishes the economic and social expertise. Some environmental hazards are included in the standard geological report that accompanies many projects.

After the responsible design unit prepares the draft EIS, the headquarters environmental unit does all further handling. It uses a checklist of the status of all submittals to the FHWA.

Implementation of environmental requirements is accomplished by the project designer and assured through the design review unit, which reviews all plans and specifications before they go to contract.

The headquarters environmental unit consists of five full-time employees: three civil engineers, one chemical engineer, and one environmental specialist (biologist). The biologist is the only additional employee hired beyond the existing staff. In the districts, there are only four people engaged in full-time environmental assessment work; any others are assigned project by project. Of the four, three are in the most urbanized district and one in another. Three are civil engineers and the fourth is a technician. With the exception of administrative and procedural work, all training has been outside the department. FHWA and the University of Utah provided training in air quality technology; the Environmental Protection Agency and U.S. Department of Transportation provided training in the measurement assessment and mitigation of noise.

At the state level, Utah has two levels of review for both EIS and negative declarations in addition to those of FHWA. Besides the Utah Transportation Environmental Council, there is an Environmental Coordinating Committee (ECC) in the state clearinghouse. This latter committee reviews the draft EIS after approval by FHWA and reviews the ND simultaneously with FHWA. The state ECC also reviews projects that are financed 100 percent with state money.

It is the opinion of the staff in Utah that their system would be more efficient if it were a completely centralized operation. A great deal of time is expended in attempting to get timely information from the districts and also from the headquarters design offices. A great deal of rework is required on the work done by others. In addition, they have found it difficult to convince others of the high priority needed for environmental material.

VIRGINIA

Although Virginia has many miles of rural highways, it is essentially a highly urbanized state. It has many unique environmental problems because of its long coastal exposure, its proximity to Washington, D.C., and its nationally significant historical heritage. Virginia's highway planning, construction, maintenance, and operation are the responsibility of the Department of Highways. The construction budget averages about $300 million. Approximately 27 people are assigned full time to the Environmental Quality Division (Fig. C-16). In addition, there is a three-man environmental unit in each of the eight districts. The districts are responsible for construction and maintenance activities in their territories. Programming, planning, and design are assigned to the central office. The preparation of all environmental documents is the responsibility of the Environmental Quality Division, with appropriate input from each division within the department. Direct input is also solicited from all interested state and local agencies as well as from private groups Very little environmental work is performed by outside consultants. Such work is occasionally contracted for under circumstances where credibility is needed for especially complicated or sensitive projects. This follows the departmental policy for other design-related activities.

All divisions become involved in the interdisciplinary determination of the significance of any specific project, with the Environmental Quality Division resolving the

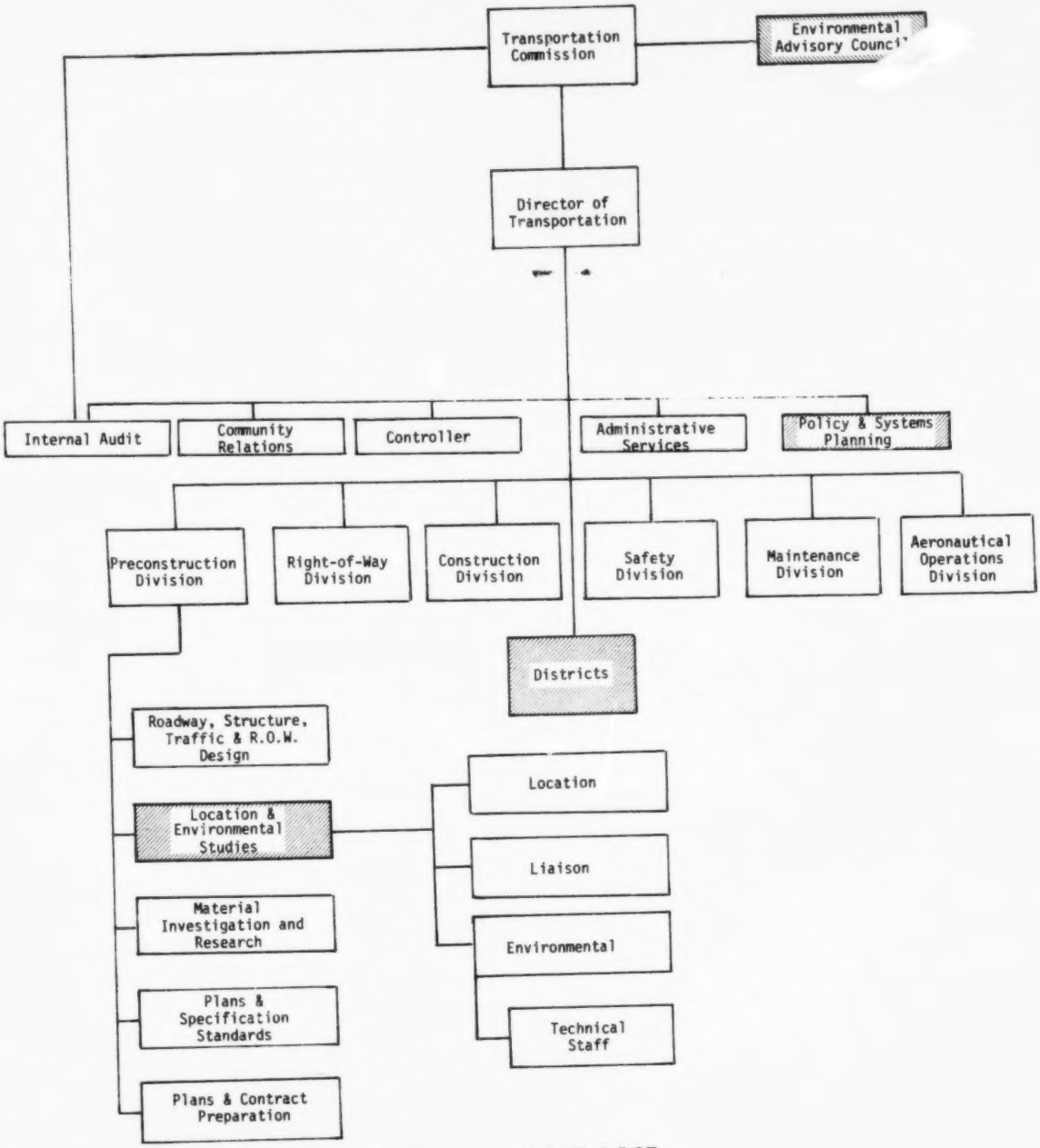

Figure C-15. Responsibility for environmental assessment in the Utah DOT.

comments from the A-95 process and preparing the environmental documents. The Environmental Quality Division is responsible for all environmental activities, including administrative policies, guidelines, procedures, data collection for assessments, preparation and review of EIS, and assistance at all public meetings.

This division performs all environmental assessment work with some assistance from the state archaeologist and with historical information from the Historic Landmarks Commission. All research is performed by the Virginia Highway and Transportation Research Council. Staff personnel of the division include agronomists, biologists, chemists, civil engineers, environmental planners, environmental specialists, foresters, geographers, highway planning engineers, landscape architects, physicists, sociologists, environmental scientists, horticulturists, and outdoor advertising specialists. This staff is supplemented with personnel from other divisions, including attorneys, urban planners, transportation engineers, transportation planners, traffic en-

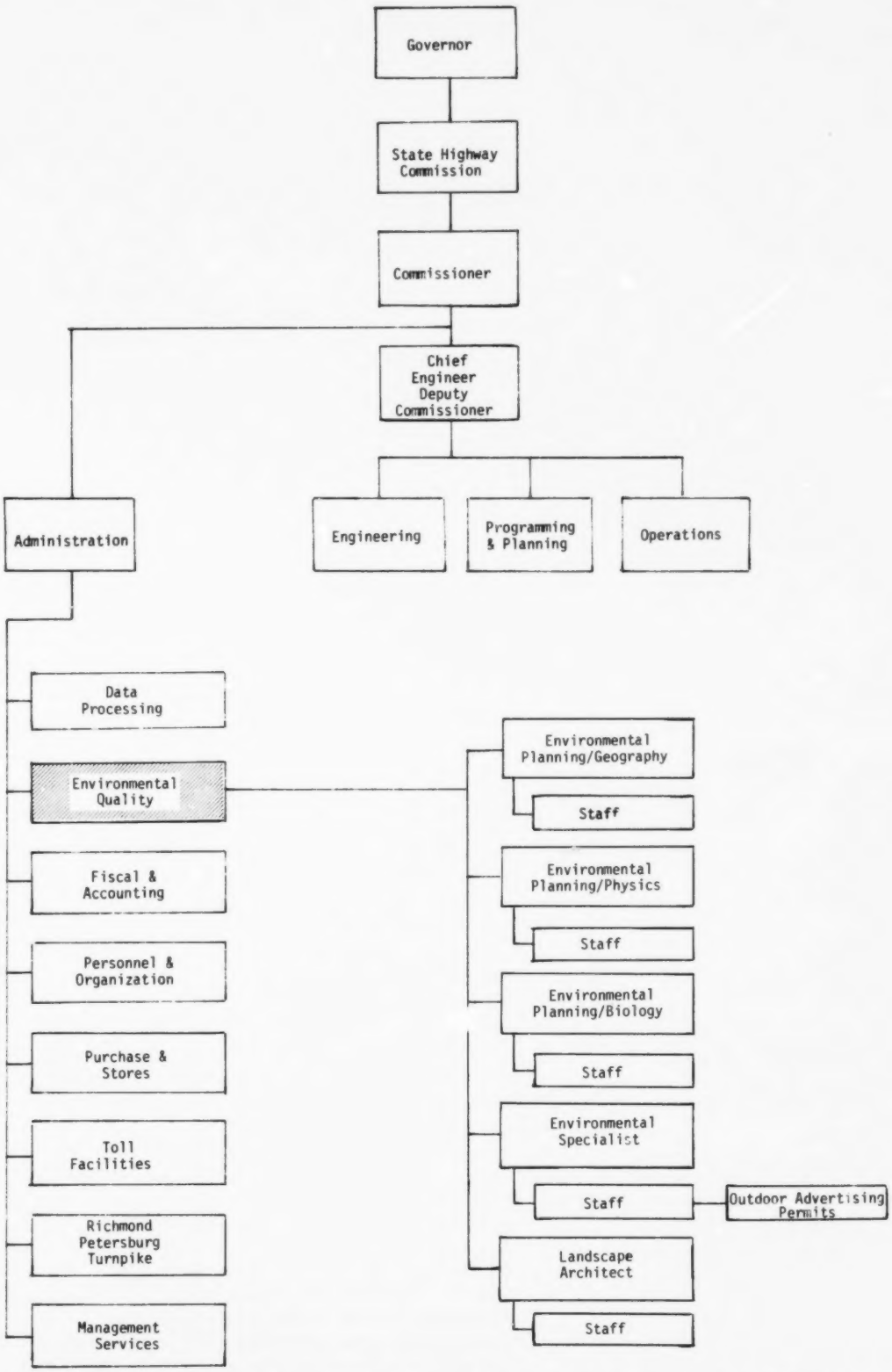

Figure C-16. Responsibility for environmental assessment in the Virginia Department of Highways.

gineers, geologists, hydrological engineers, materials engineers, structural engineers, and right-of-way engineers.

Other than the landscape architects, agronomists, outdoor advertising specialists, and engineers, all of the Environmental Quality Division staff were newly hired for their positions. Training has been accomplished primarily by in-house courses supplemented by FHWA seminars. In addition, top staff people have been sent to other states for special training. Virginia has established a career ladder, with the top class being State Highway Environmental Planning Engineer followed by State Highway Assistant Environmental Planning Engineer, and Highway Environmental Planner. The journeyman-level positions are Environmental Planner (Ecologist), Environmental Planner (Economist), Environmental Planner (Physicist), etc. There are planning engineers, environmental specialists, and highway technicians to complete the ladder. A special class of District Evironmental Coordinator heads up the environmental activities in the districts. The District Coordinator serves as technical advisor to the district and local citizens in environmental matters and monitors construction and maintenance activities relating to environmental quality. The position is also designed to serve as liaison between the district and central office in environmental matters.

The Environmental Quality Division is involved in all phases of environmental assessments, including performing special studies during operation of the highway. They also process all permits involved in the department's work.

Virginia's Environmental Quality Division has made a special effort to win the approval of the public. An example of this is a special award they received recently from Trout Unlimited, acknowledging a special effort by the department in protecting a trout habitat.

Virginia considers their system to be highly effective both in processing assessments and involving other divisions of the department in the complete process. They are concerned about the continuing involvement of other state agencies because they have been receiving such service gratis. Other agencies are finding the demands on their time to be more than anticipated. It appears that some sort of reimbursement program may have to be developed.

WASHINGTON

Washington is a rugged rural state but with heavily urbanized industrial areas especially along its coastal territory. Its highway planning, construction, maintenance, and operation are the responsibility of the Department of Highways. On the average, the highway construction program is about $250 million.

The Department of Highways in Washington is highly decentralized. Six districts are responsible for all the highway activities within their territory. The central office has responsibility to establish policy and provide leadership and coordination through managerial controls and standards. The headquarters Environmental Planning Branch has responsibility for the social, economic, and natural environmental areas and in addition provides expertise for a number of disciplines for various interdisciplinary teams (Fig. C-17).

In Washington, interdisciplinary teams are formed in the systems planning phase and in the location and design stages of project development (Fig. C-18). Appointed by the district engineers, such teams provide expertise needed for the particular project under study. Members of interdisciplinary teams are obtained primarily from the staff of the districts and headquarters; however, personnel from other state and local agencies and consultants are usually included.

The Environmental Planning Branch consists of 24 members, including four economist, two sociologists, one urban planner, two air quality specialists, one biologist, one water quality specialist, two acousticians, and four environmental analysts. Biologists, architects, landscape architects, transportation planners, and other experts are available in other offices within the highway department. In one section of the environmental branch, personnel have responsibility for the evaluation of social, economic, and land-use factors, and the development and implementation of community involvement programs. This section also has various responsibilities relating to the implementation and revision of the Action Plan. Another section of the environmental branch has responsibility for the evaluation of air quality, noise measurement, water quality, biology, and the development of policies and procedures for the preparation and review of environmental impact statements and assessments. (The environmental impact statements are prepared by the districts.) The section also has responsibility for coordination with other state and local agencies. The personnel of the environmental branch provide technical assistance to the districts and serve as members of interdisciplinary teams.

Washington has established procedures to assess each project included in the first two years of the six-year capital improvement program. The assessment includes the potential environmental and engineering impacts and classification of projects into three groups relating to their impact.

With the exception of archaeologists and historians, Washington is equipped to handle most work with their own staff. In the fields in which they are not staffed, they rely primarily on other state and local agencies. All work furnished by other agencies is reimbursed on an actual-cost basis.

A career ladder is being developed within the Environmental Planning Branch. For engineers and natural scientists, an Environmentalist series has been developed. For social scientists, another series has been developed. Plans are being made to permit advancement through either of these series to the level of administrator of the branch.

To provide the additional expertise needed to adequately evaluate the environmental impacts, during the last year 86 individuals have attended NHI and EPA courses on air quality, noise control, ecological impact, water quality, community involvement, environmental design, and EIS preparation. Six engineers and one economist have also attended graduate school cosponsored by NHI and the highway department and have attained advanced degrees in acoustics, water quality, environmental planning, and economics. In addition, the headquarters staff has con-

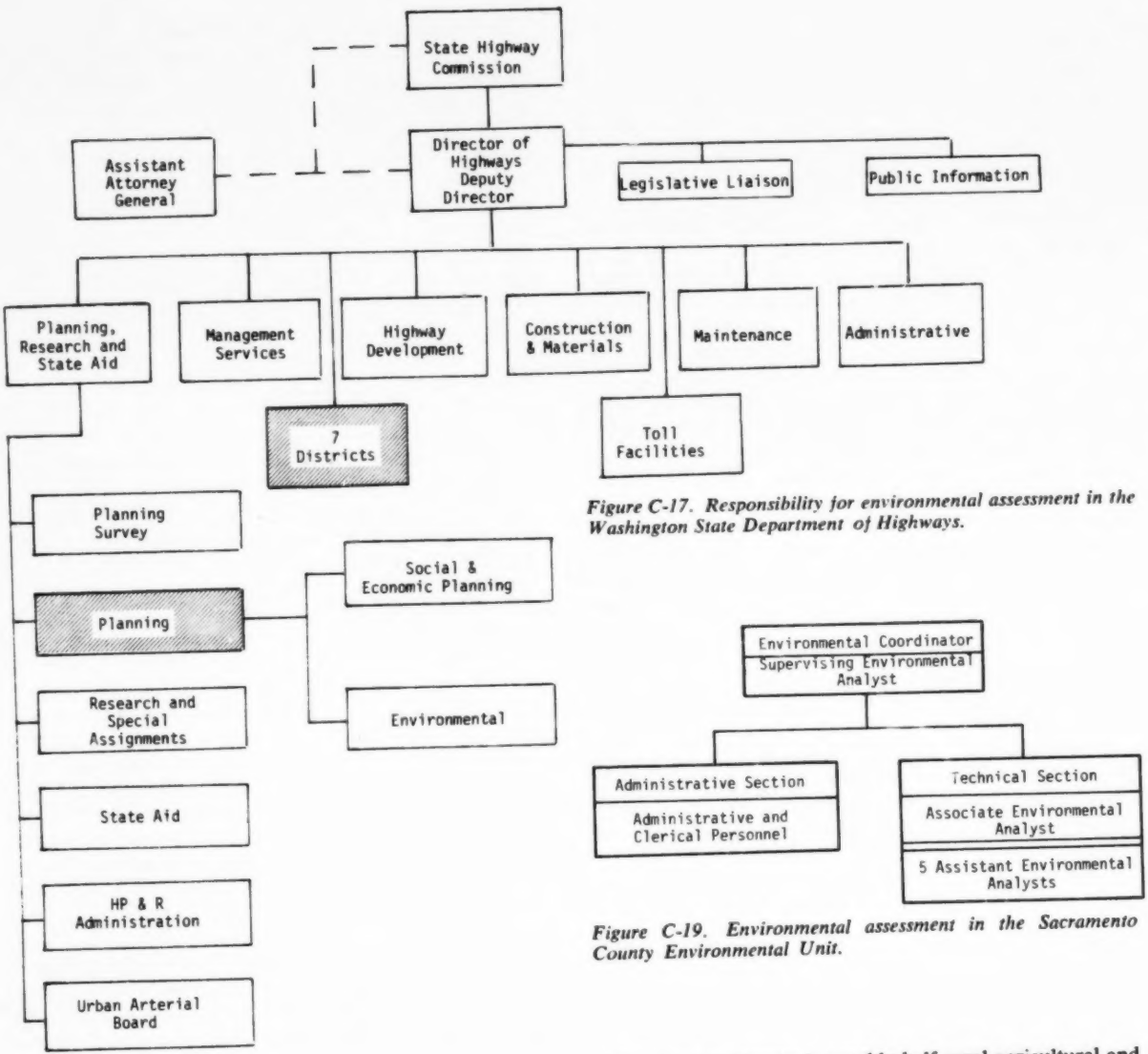

Figure C-17. Responsibility for environmental assessment in the Washington State Department of Highways.

Figure C-19. Environmental assessment in the Sacramento County Environmental Unit.

ducted short courses on various aspects of the human environment, with more than 300 participants.

The staff and executive level of the Washington Department of Highways consider their system to be highly effective. They are especially proud of the early involvement of engineering and environmental considerations to ensure early solution to public concerns.

SACRAMENTO COUNTY

Conversations with several cities and counties throughout the nation indicate a wide variability in approaches to NEPA. The way in which they approach environmental assessments depends on local public attitude and the leadership of the local political establishment. Sacramento County, California, is representative of the middle-of-the-road county approach to NEPA.

Sacramento County is roughly half rural-agricultural and half urban in character. Its population is about 700,000, with nearly 600,000 concentrated within and around the city of Sacramento (262,000 within city limits). The county has a Board of Supervisors and a County Manager.

The Sacramento County Environmental Unit is shown in Figure C-19. The Environmental Unit is within the Building Inspections Agency; however, it is a service unit to all county agencies as well as the private sector. The unit prepares the environmental assessment reports and impact statements for all county projects except the larger ones. The larger public works projects are usually environmentally assessed by a design consultant; the county Environmental Unit does write the EIS (or other report if it is not federally involved). This same unit is also available on a fee basis to prepare environmental impact reports for private developers. California law requires an environmental impact report for private development on privately owned land for which a permit, lease, license, funding, or other

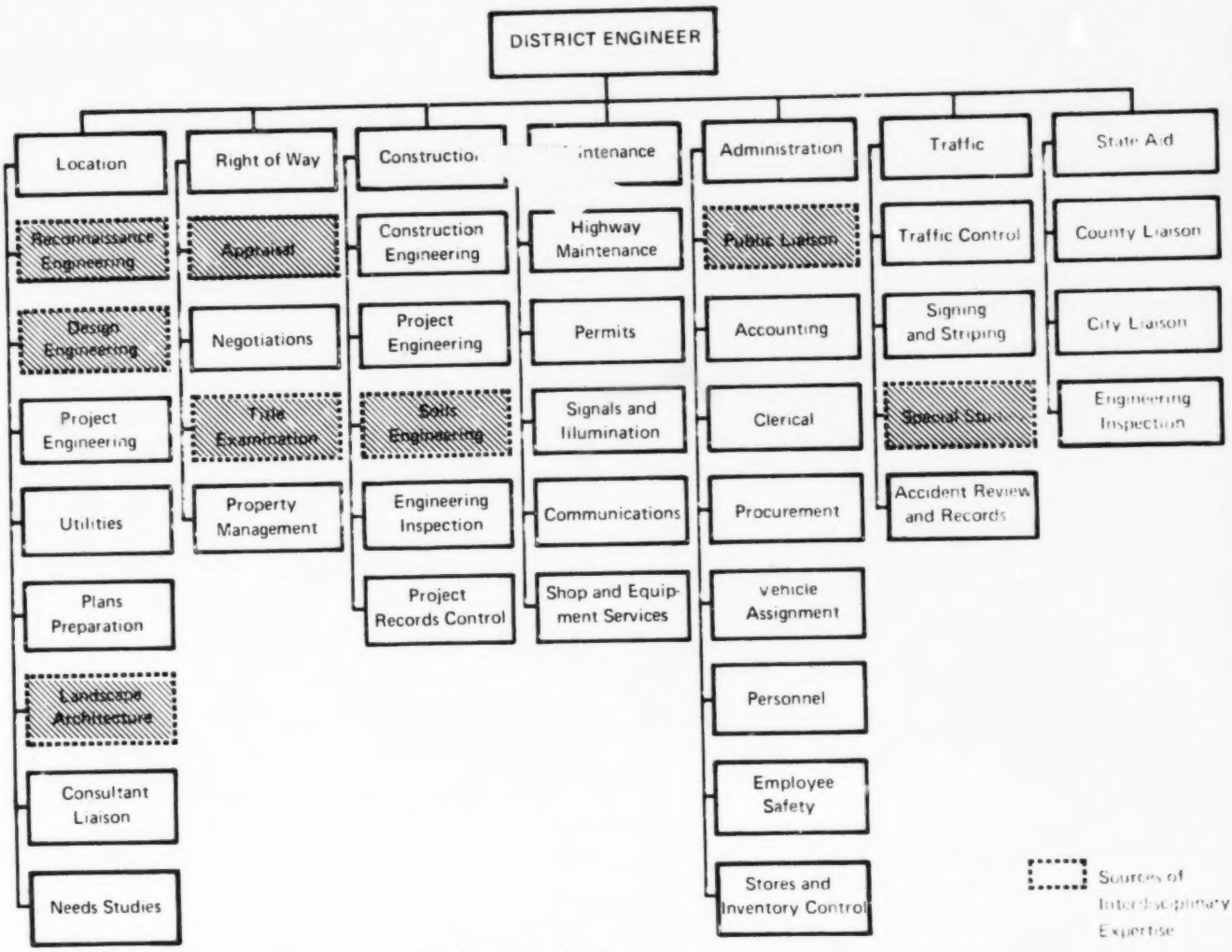

Figure C-18. Environmental assessment in a Washington district office.

entitlement of use is required from the county. After this requirement went into effect, the county soon found that few private developers were equipped to prepare such reports; thus, the county offers the service for a fee. The procedure has worked well. The county Environmental Unit also provides a similar service to the cities of the county and also to the local transportation region. However, most of the larger transportation project environmental studies of the local entities are done for a fee by the state department of transportation.

The career ladder in the environmental series starts with Environmental Technician, which is the beginning class directly out of college with a B.S. degree in an environmentally related science (at present the staff has degrees in biology, geology, and economics). The class steps then progress from Assistant Environmental Analyst, to Associate, and then to Supervising Environmental Analyst, with two years experience needed in each grade for promotion. People can also start at higher grades with various combinations of advanced degrees and experience. The support budget for the Environmental Unit is about $200,000 per year.

The opinion of the staff is that they are highly effective. This is substantiated by opinions expressed by others with whom they are associated.

APPENDIX D

SYNOPSES OF ADDITIONAL STATES' ENVIRONMENTAL UNITS

Appendix D contains shorter summaries of the information supplied by fourteen additional states on the structure and organization of the environmental units in their highway agencies.

ALASKA

The Alaska Department of Highways has undergone some reorganization since the Action Plan was published, with the creation of the State Highway Engineer in addition to the Deputy Commissioner of Highways. The State Highway Engineer has the district engineers (five) and Preconstruction Engineer (division head) reporting directly to him.

Each highway district has an environmental section, which reports directly to the district Preconstruction Engineer. The headquarters Environmental Section reports directly to the headquarters Preconstruction Engineer. The headquarters Environmental Coordinator has second-level supervision over the district environmental sections.

The Alaska Department of Highways maintains 23 environmental positions statewide.

ARKANSAS

The Environmental Section of the Arkansas State Highway Department is responsible for social, economic, and environmental assessments, including air, noise, and water quality, and subsequent preparation of environmental statements. The staff of the Environmental Section does rely on in-house cooperation for engineering and economic data. In addition, a great deal of information is obtained from other state agencies and federal agencies.

IDAHO

The Chief of Highway Development of the Idaho Transportation Department is responsible for the direction of the Environmental and Corridor Planning, Roadway Design, Bridge Design, Right-of-Way, and Local Roads sections.

The Environmental and Corridor Planning Section is responsible for assuring interdisciplinary action for the social, economic, and environmental (SEE) aspects of planning, location, design, construction, and maintenance of highway projects. The responsibility for control of the technical quality of studies also rests with the Environmental and Corridor Planning Section. This section furnishes guidance and methods to district teams.

The Research Unit within the Environmental and Corridor Planning Section conducts SEE research and data gathering studies, including soil, geologic, air, noise, water, biologic, aesthetic, sociologic, and economic studies and prepares technical reports as required for the environmental impact statements. This unit is also responsible for reviewing and disseminating new concepts and procedures to maintain currency on SEE evaluation techniques.

The Communications Unit within the Environmental and Corridor Planning Section is responsible for the preparation and publication of environmental impact statements and negative declarations. This unit is also available to assist in the dissemination of technical material. They may assist in conducting public hearings and forums.

An in-house staff of specialists is also available to assist the Environmental and Corridor Planning Section on an as-needed basis. Assignment of these specialists is arranged for by the Environmental and Corridor Planning Supervisor in consultation with the appropriate bureau chief or section supervisor.

The use of consultants and representatives of other federal, state, and local agencies for special technical SEE studies minimizes the need for a specialized staff within the division and contributes reliability and impartiality to the division's actions and conclusions. Agreements are developed as needs arise with federal, state, and private agencies.

The Location and Mapping Units within the Environmental and Corridor Planning Section are responsible for organization and coordination of division-wide field and office engineering activities concerned with photogrammetric mapping, preparation and development of location alternatives, and aerial surveys needed to assist in the establishment of proposed highways by reconnaissance and preliminary surveys and reviews. An archaeologist from Boise State University is under contract with the division; under general supervision of the Environmental and Corridor Planning Supervisor, the archaeologist provides clearance for projects and materials sites. If any area is significantly interesting, the archaeologist may suggest that the area not be used or that work be delayed until the artifacts are removed.

The district environmental staff consists of the environmental manager; the location, design, traffic, materials, maintenance, and resident engineers; the geologist; right-of-way agent; and the equal employment opportunity (EEO) representative. The district environmental manager coordinates items related to the social, economic, and environmental aspects of highway work at the district level. Each of the remaining members of the environmental staff is assigned by the Assistant District Engineer to provide specialized information and expertise as needed.

The district environmental staff:

- Conducts an environmental resources reconnaissance of the natural and man-made features of the existing environment.

- Contacts other agencies and the public for SEE input data.
- Inventories SEE input data.
- Accomplishes those studies that are within their capability and arranges for special studies through the Environmental and Corridor Planning Section.
- Analyzes SEE effects with respect to proposed alternative routes.
- Evaluates SEE impacts to ensure that all effects have been properly considered. Completes and sends to the Environmental and Corridor Planning Section the environmental assessment containing the district SEE inventory and recommendations.

INDIANA

The Indiana State Highway Commission elected to integrate their environmental assessment work into the various functional units existing in the department.

The unit chief responsible for the project development is responsible for determining and obtaining the coordination, cooperation, and assistance necessary to integrate the efforts of the different disciplines involving outside agencies, consultants, and other commission divisions. The unit chief then documents this decision in the project records.

The interdisciplinary resources of the commission that are used in the identification and analysis of SEE effects are located within those divisions where their special expertise can best be used in the day-to-day activities of the commission. For example, the Division of Planning includes a biologist, ecologist, geologist, and sociologist who are available for environmental assessment work. The Division of Roadside Development has technicians in air and water quality to measure impacts in these areas.

The interdisciplinary resources of other agencies are used in the SEE studies. The Indiana Department of Natural Resources provides services to the commission in the areas of agriculture, forestry, historical preservation, water resources, and zoology. The state board of health assists in sanitary engineering and air pollution studies and the laboratory of the Indiana University Archaeology Department is involved in archaeological assessment.

KANSAS

The state civil service system in Kansas does not provide classifications or career patterns for the specific disciplines that normally might be employed in the evaluation of the various social, economic, and environmental impacts of a proposed highway improvement. It is also a collective opinion in the agency that such assessments can be more readily prepared by personnel thoroughly familiar with the highway engineering aspects of the improvement rather than by nonhighway-oriented individuals.

With this thought in mind, an in-house inventory of the educational backgrounds of the professional staff was undertaken to detect other interests and capabilities that were not being used in their present positions. This was a most successful effort and a great many other skills were revealed.

Many existing state agencies have been assigned responsibilities by legislative action that preclude ignoring their potential input in such instances; thus, a review of environmental statements by these agencies generally occurs. Nearly all agencies solicited to date have been supportive; however, such reviews have necessitated the addition of personnel in several cases. In one instance, a cost-reimbursable continuing contract has been negotiated with a "nonfee" agency to offset the cost of their efforts to provide such services. This arrangement has also been considered with a number of other agencies and may eventually become a necessity.

The possibility of contracting with various state universities for specific information has also been considered. This has not been necessary so far; however it does provide another source of expertise.

The actual preparation of environmental impact statements in the Kansas Department of Transportation is performed by the Location and Design Concepts Department, the Design Department, the Urban Highways Department, and the Secondary Roads Department. The responsibility for the preparation of the EIS is assumed by the department in which the project originates. As a result, the more detailed environmental impact statements are prepared by the Location and Design Concepts Department, with the other departments being more concerned with supplements to such reports or negative declarations.

This approach to the staffing problem has been most successful and responsive to the state's needs. It has, perhaps, the hazard of unpredictable time frames because much of the information is provided by personnel not under the jurisdiction of the Kansas Department of Transportation. To date, this has not been a major problem.

MASSACHUSETTS

Massachusetts has an average highway construction program of about $140 million. The planning, construction, maintenance, and operation of highways are the responsibility of the Department of Public Works. The department staff performs little of the engineering involved in highway planning. The state prefers to contract out most of this type of work.

This approach also applies to environmental studies. Within the central office Project Development Division, an Environmental Section has been established with an environmental staff of ten. They prepare approximately 2 percent of the environmental assessments in-house. The section prepares a few major environmental impact statements and almost all of the negative declarations and coordinates all environmental activities. It is responsible for assuring the environmental quality of all projects; however, the major effort is directed toward the review of work of others.

The department depends entirely on consultants for SEE expertise. Massachusetts has acquired no new personnel but has used the NHI and other FHWA courses and seminars for comprehensive training of their existing staff.

NEW HAMPSHIRE

In the New Hampshire Department of Public Works and Highways, the Environmental Section is a part of the Highway Design Division. In addition, environmental assessments are performed by consultants. The coordination and review of consultant activities is the responsibility of the Highway Design Division.

Members of the Environmental Section also serve on the interdisciplinary evaluation team. This team consists of the Assistant Design Engineer, Advance Planning Engineer, the Secondary Roads Engineer, a biologist, an air and noise pollution analyst, the Chief Appraiser, the Chief Relocation Assistance Adviser, and a water quality analyst; the team is chaired by the Assistant Chief Engineer. This team provides input and direction to departmental staff in assessing social, economic, and environmental impacts. They are also responsible for determining the project category and the type of environmental processing subject to approval by FHWA. Specific problems identified by the team are assigned to each member for investigation, study, and recommendations. A representative of the FHWA division office is an ex officio member of the team and provides information related to federal regulations. In addition to the team, the department is fortunate in that they are a centralized operation located in the capital city of a small state. This allows for informal coordination between state agencies. Particularly noteworthy are the working relationships developed with the New Hampshire Fish and Game Department and the New Hampshire Air Pollution Control Agency.

NEW YORK

The New York State Department of Transportation is organized somewhat differently than the traditional highway department because they have been a transportation agency for some time. Their highway construction budget is about $650 million. They contract out most of their design, including some environmental studies, and most of their construction inspection.

About 75 percent of the environmental assessment work is done in-house with the regional (district) offices responsible for reports and statements. There is a small Environmental Analysis Section located in the Project Development Bureau consisting of three units: air quality, noise, and socio-economic analysis. It is the responsibility of these units to coordinate all environmental activities. They prepare guidelines and procedures, review EIS, assist the regions in resolution of comments, and provide assistance at public meetings and in training. They also are responsible for the Action Plan implementation.

New York has established a new Transportation Environmental Specialist class; however, most of their positions in this field have been filled by retrained staff personnel. At first, personnel were selected for their unique backgrounds, and there was a great deal of individual effort aimed at specialized training. Now, in addition to NHI and EPA courses, most training is in-house accomplished by Environmental Analysis Section personnel. Courses provided are Noise Prediction and Abatement, Noise Measurement, Air Quality Analysis, Community Involvement Techniques, EIS Preparation, Ecological Impacts, Water Quality Analysis, Historic Preservation Investigation and Analysis, and Social and Economic Impact Analysis.

The state has depended primarily on other state agencies to provide them with a complete interdisciplinary approach. This has been somewhat sporadic; however, there is now a state law paralleling NEPA. This should improve the situation. The cooperation of agencies such as the Department of Environmental Conservation has been excellent. This department performs the air quality measurements through a cooperative agreement.

NORTH DAKOTA

The North Dakota State Highway Department does not have a separate environmental division. All environmental studies and the preparation of environmental statements are carried out by or coordinated by the Programs and Surveys Division, with assistance from personnel in other divisions who have special background, training, and interests.

Two staff members within the Programs and Surveys Division (an environmental engineer and a biologist) devote their full time to environmental matters. Three other staff members in this division devote a portion of their time to environmental studies related to landscape architecture, air quality, and noise abatement. Department staff in other divisions provide expertise in sociology and economics, land-use planning, and geology.

The department does not have any people with the expertise necessary to conduct historical or archaeological studies. These studies are conducted by the state historical society on a contract basis.

The Environmental Engineer within the Programs and Surveys Division is responsible for coordinating all the studies and assembling the environmental impact statements.

OHIO

In the Ohio Department of Transportation, the Environmental Planning Section is responsible for ensuring the consideration of all environmental impacts by the department. It is located in the Bureau of Environmental Affairs, which is part of the Division of Transportation Planning.

Environmental Specialist is a general working title for the specialist in the natural and social science areas. These positions are filled by an aquatic biologist, terrestrial biologist, economist, sociologist, and an archaeologist. Other expertise is obtained by using consultants for special reports.

OREGON

The Oregon Department of Transportation maintains an environmental section in the Right-of-Way and Development Branch of the department. The section has a geologist; urban planner; biologist; cultural geographer; air,

water, and acoustics specialists; an economist; and a programmer. There is also a staff of project managers and a professional writer. The department has one environmental specialist in each region who reports to the Regional Engineer but who receives training through the Environmental Section and works closely with section personnel.

The Environmental Section does use outside assistance as required. Some major projects such as urban freeways are, at times, contracted out to a consultant firm. In the field of archaeology, information is coordinated within the Environmental Section; however, actual surveys and salvage are contracted to institutional archaeologists. Some assistance is received from the staff of the State Historic Preservation Office on historic matters. The department receives more occasional and sporadic assistance from other state and federal agencies in the form of reviews and comments.

Other sections provide clerical, administrative, and other support functions, as well as information relating to traffic, right-of-way, location, and design aspects of projects needed to perform the social, economic, and environmental analysis.

SOUTH CAROLINA

The Environmental Section of the South Carolina Highway Department has a staff of eight, including clerical support. The section is managed by an Environmental Program Administrator who, with assistance from the Environmental Requirements Coordinator, prepares environmental impact statements, nonmajor actions, and negative declarations. The section has two research analysts, who work primarily on nonmajor actions and negative declarations, and a technical studies supervisor and engineering associate, who perform air and water quality studies and noise measurements.

WEST VIRGINIA

The West Virginia Department of Transportation has not established a separate section to consider social, economic, and environmental matters. Instead, the various disciplines are assigned to the operating divisions of the department.

The Environmental Section of the Design Division is responsible for the preparation of environmental impact statements (i.e., the writing and editing of such statements). A sociologist and a historian-writer are in this section.

The Environmental Review Unit of the Project Control Division is responsible for monitoring all pertinent departmental activities for conformance to the Action Plan. This unit is staffed with an attorney, an engineer with planning and traffic background, and an engineer with construction and materials background. It has available on a part-time basis a sociologist and an environmentally oriented landscape architect.

WYOMING

The Environmental Services Branch of the Wyoming Highway Department contains an environmental services engineer, public information officer, staff engineer, and three interdisciplinary team leaders to handle environmental assessments. The interdisciplinary team leaders participate in a variety of studies to determine the social, economic, and environmental impacts of transportation projects. They are also present at public meetings and relevant activities of other divisions.

The staff engineer assists the team leaders, as well as coordinating the environmental services of other state agencies. The public hearing officer makes sure that draft environmental impact statements and negative declarations are available to the public.